

Technical and Bibliographic Notes/Notes techniques et bibliographiques

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

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

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

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

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

CY.

THE
CANADIAN AGRICULTURIST,
AND
Transactions
OF THE
BOARD OF AGRICULTURE OF UPPER CANADA.

A MONTHLY JOURNAL,
DEVOTED TO
AGRICULTURE, HORTICULTURE, SCIENCE,
AND
DOMESTIC AND RURAL ECONOMY.

Illustrated with Engravings.

EDITED BY GEORGE BUCKLAND.

VOL. IV.—1852.

TORONTO, CANADA WEST:
WILLIAM M'DOUGALL, PROPRIETOR.

MDCCLII.

INDEX.

	PAGE.		PAGE.
Ad-laide Academy, Notice of	214	Canada, Capabilities of	136
Adulteration of Food	231	Canadian Farming, New Plan of	112
Agriculture as a pursuit—Prize Essay, by W. Hutton	1	Canada Western, Progress of	135
" " Prize, by John Lynch	33	Canada: Past, Present, and Future. Reviewed	96
Agricultural operations for the month	9, 42, 31	Canadian Family Herald	191
Agricultural Associations, Lecture on	11	Candles, Economy in	63
Agricultural Association of U. C. Officers of Local Committee	86	Candles, Science of burning	252
Agriculture, its advantages as a pursuit, by Horace Greeley	130	Canine Intelligence	61
" " " by E. W. Thomson	65	Capital, What is?	146
Agricultural Association, Fair of, for 1852	239, 330	Cape Horn, Description of	147
" " Annual Meeting of	314	Carbonic Acid in his own Defence	22
" " President's Address	296	" " in reply to Mr. Ruttan	90
" " Prize List	301	Carbon, Supply of	60
Agricultural Bill	353	Cattle, Care of	84
Agricultural Society of Lower Canada, Remarks of Mr. Kirkwood on Farm of	214	" Improved Breeds of, by Mr. Sotham	103, 137
Agricultural Societies, The New Bill for	315	" Controversy respecting Different Breeds—205, 236, 274, 338	338
Agricultural Society of Scotland, Show of	341	" Improved Breeds of, Essay on	206
Agricultural Machinery	252	" Letter from Mr. Parsons in reply to Mr. Sotham	210
Agriculture, Essay on	257	" Relative number of Improved Breeds of, at the several Provincial Shows	239
Agricul. Soc. of Wisconsin, Letter from Sec'y. of	375	" Cure for Hoof Ail and Horn Distemper	247
Agricultural Society of Etobicoke	463	" " Gripes or Colic	241
Air, Remarkable Voyage of J. Wise in the	251	" Mr. Vail's Sale of Improved	255, 244
A little learning is a dangerous thing	119	" The North Wales	369
Alchemists not all in the wrong	123	" Naming of	345
An Extensive Farmer	233	Census, The Agricultural, of Canada	345
Animalcules; their functions	223	Charcoal, Effects of	215
Animal Matter, Decomposition of	223	Charcoal, Preserving Effects of	46
Animals, Ear of	62	Chatsworth and Paxton	26
" On Feeding	87	Cheese Cake, Curd	221
Animals, Experience of	233	Cheap Wash for Cottages	189
Anastatic Printing	343	Chemistry applied to Agriculture	82
Apple Trees, Protection of, Remarks of Prof. Croft	245	" of Nature and Art	232
Apple Pudding, Farmers'	36	China, How to Clean	119
Apples, The best varieties	151	Chloroform, Use of	251
Artichoke, Value of	75	Climate of Western Canada, Comparative View of	30
Arctic Sea, Life in the	253	Clod-Crusher, Croskill's	269
Artesian Wells	120	Clover-sick Land	252
A word to our readers	3	Coal, How to Burn	26
Axles, Greasing of	29	Coal and Civilization	59
Ayrshire Cattle	77	Cockroaches, How to Destroy	62
Bates, Thomas, Notice of	266	Coffee, History of	107
Baths in Dwelling-houses	62	Cole, S. W., Death of	17
Beet-root Sugar	39	Combustion, No Matter destroyed in	222
Beet-root Sugar in Ireland	244	Conscience, Case of	62
Beauty every where	255	Cooke, R. F., on Improvements in Farming	184
Beer, White Spruce	255	Cough, Cure for a	255
Blankets for Sheep	46	Cows, How to Milk	36
Board of Agriculture—Officers of—Donations to	3	" Propensity to eat the After-birth	270
" Meeting of	132, 263	" for Dairy Purposes	276
" Communication of Hon. M. Cameron to	263	Crib-biting, Prevention of	18
" " Proceedings of the	264	Croft's, Professor, Reply to Mr. Sotham's Inquiries	152
Boundary line of Knowledge	51	Crystal Palace of New York	232
Bone Manure; Remarks of Professor Buckland and Crofts on mode of preparing	327	Currant Water, To make	255
Brick Houses, Shifting	251	Dairy Husbandry	107
Brick Machine	26	Dahlia White, How to turn blue,	250
Butter-making, Improvements in	216, 217	Dangerous Gardening	151
Bureau of Agriculture; Hon. M. Cameron's Bill	315, 321	Deep Ploughing	111
Buckland, Mr., Lecture on Agricultural Societies	11	Devon Cattle, Letter from Mr. Tye respecting	238
Buttermilk	64	" Letter from Mr. Parsons in reply	333
Canadian Progression	69	Ditching Machine	111
Canada Balsam	51	Donkey, Sagacity of	67
Canadian Institute—Conversation	158	Double Plough	73
Canadian Factories, Furnaces, &c., at Niagara Falls	141	Drainage, Cost of in England	256
		" Advantage of	263

	PAGE.		PAGE.
Drill Husbandry, Report of Hamilton Farmers' Club	142, 192	Herefords <i>versus</i> Short Horns	215
Durham Cattle, Opinion of members of Hamilton Farmers' Club on	203	Hereford Bull, "Walford"	180
" Advocacy of, by Mr. Parsons	211	Hind, H. Y., on the Climate of Canada	30
" Premiums awarded to at Smithfield	213	Highland Society's Museum	31
" Vindication of, by President of Agricultural Society of Frontenac, Lennox, and Addington	226	" Show for 1852	340, 341
Early Rising, Advantages of	23	Hoof-Ail, Cure of	211
Earth, Structure of	121	Hot Summers	235
Earth, Circumference of	223	Hoops, Death of Robert	50
Editorial Notices	32, 159,	Horn Distemper, Cure for	41
Education of the heart	55	Hoven, Cure for	11
Education	387	Horse, Sir Robert Gillespies'	23
Eggs, Gigantic	153	Horse Hoe, Description of	47
Electricity Singular Phenomena of	262	Horses, Anecdotes of	17
Essay on Agriculture, by Lewis Chipman	257	Hodges, T. L., On Milking Cows	32
Exhibition, Canada at the Great	273	Horticulture, Science and principles of Gardening	13
" Provincial	299	" Principles of Cultivation	17
" " Prize List	301	" Organs and parts of Plants	19
" " Analysis of the	323	" Agents which affect Plants	89, 118, 150
" " Suggestions of Mr. Matthie relative to	330	How to Admonish	1
" " Remarks of Americans on	331	Hussey's Reaper in Canada	20
Experimental Agriculture, letter from Mr. Kirkwood	239	" " in England	20
Farmers' Club, Hamilton, Sheep Husbandry	13, 206	Hutton, W., Prize Essay on Agriculture	1
" " Drill Husbandry	142, 182	" " Cost of raising Wheat	17
" " East Oxford	271	Ice and Ice Houses	12
Farming in Lower Canada, Letter of Captain Rhodes	239	Improvements in Farming	12
" " Notices of in L. C.	342	Ink, To prepare permanent	155
Farmer, A. H., on Capabilities of Canada	136	India Rubber, Novel employment of	55
Female Education	295, 313	Insects, Habits of	63
Ferguson, Hon. A., Challenge on Durham Cattle	17	Intellect developed by labour	151
" " Pedigree of Short Horns	47	Inventions, Beginnings of great	280
" " Measurement of Stock	140	Ireland, Farming in	46
Flax, its Cultivation, &c.	101, 103	" Galway Cattle Show	242
" Donlan's Machine	231	Irish Agriculture, Suppressed state of	103
" " Growing in England	231	Irrigation by liquid manure	102
" " " in Ireland	232	Iron Ore at Marmora	103
" " Letter to Mr. Widder respecting Donlan's Machine	231	Japan, Empire of	349
Flowers, Love of	318	Jethro Tull, Notice of	213
Frankland, Dr., Address	97	Kerosene Gas in Nova Scotia	94
Friar Bacon's Prophecy	51	Knitting Machine	94
Frontenac, Lennox and Addington Agricultural Society of	225	Land Formations in North America	26
" " Address of President of	226	Land Presser	72
Fruit, New Plan for Ripening	250	Leicester Ewes	111
Fruit Trees, Remarks of a Young Farmer	326	" Pork Pies	64
" " To Protect from Mice	59	Lemon, The, Notice of	246
Galton's Expedition in Africa	27	Lemonade, To make	255
Galway Cattle Show	242	Life, Realities of	30
Garden, Beauty and Comfort of	243	Life-Boat	315
Gas Works, Effect of Liquor of, as a Manure	239	Light, Electric	206
Geological Survey of Canada	24	Lightning, Effects of	251
German, Lecture on	91	" Conductors, Length of	123
German Sausages	93	Lillie, On growth and prospects of Canada	37
Gestation, Period of, in Animals	145	Linen scorched, To restore	64
Glass Walls for Gardens	151	Logan, W. E., Provincial Geologist	279
" Covering for	151	Lord Spencer's rules for selecting male animals	63
Government Grant to Societies, 1852	244	Lower Canada Journal and Transactions	30
" " Department of Agriculture	41	Lynch, John, Prize Essay	33
Grain Drill, Nixon's Improved	273	Machine for digging guano	10
Grass, Manure for	252	Magnetism	60
Greasey, Horace, Essay on Agriculture	130	Manufactures, Extent of in County of Hastings	195
Growth of Plants in Abnormal Atmospheres	117	Manures, The mode of action	43
Gutta Percha, India Rubber, &c.	279	Manure, Saving of	260
" " and the Electric Fluid	154	Macklem, C. T. Furnaces at Chippawa	140
Gypsum as a Manure	139	Mechr's Balance Sheet	31
Hams, Mode of Curing	139	Mechanics' Institute Soiree at Toronto	155
Harland, John, Prize Report of County of Wellington	162	Middlesex and Elgin Agricultural Society	229
Harrow, Norwegian	266	" " Recommendation of do. as to Model Farms	230
Hastings, County of, Agricultural Report	193	Mice in barns	46
Hay-maker, Smith's	236	Mice and Reptiles	151
Hay-cutting and Curing	237	Milk solidified	18
Hastings, Value of land in	193	Milking Cows, Precaution in	183
" " Butter and Cheese in	196	Milk, Facts about	182
" " Lumber Trade of	196	Model Farms, Memorial of Agricultural Society of United Counties of Prescott and Russell thereon	262
		" " Letter of Sheriff Treadwell concerning	203
		" " Letters of Mr. Everett and Mr. Miller on the subject of	204
		" " Of Lower Canada	205
		" " Remarks of Mr. Jones thereon	338

	PAGE.		PAGE.
Moral Courage	29	Salt for Cattle -	135
Morton's Cyclopaedia of Agriculture	159	Science in Agriculture, (Royal Agricultural Society)	242
Mountains, Formation of	94	" Applied to Agriculture	97
Moyle, H., on Geological Survey of Canada	24	School Architecture	54
" on the Use of Gypsum	139	Scouring in Cattle, Cure for	136, 241
Natural Science, Advantages of Studying	153	Scotch Barns	64
Newfoundland Dog, Noble Conduct of	231	Scotch Carts	74
New York State Fair, Notice of	351	Soeds, Propagation of	220, 231
Normal School, Laying Foundation of	53	Sheep, Remarks on Canadian	227, 238
" Public Examination of	157	" Husbandry in Canada	13, 103
Norton, Professor, Death of	330	" Expense of keeping	17
Ocean Steaming, Unprecedented	27	" Pasture, Importance of renewing	45
Ohio State Fair, Notice of	351	" Blankets for	46
Oranges, History of	246	Shepherd, The Scottish	29
Osage Orange Seed	250	Shepherd's Dog	179
Ostrich Feathers	235	Shingle Machines	346
Pamphlet, Proposed, on Agricultural Societies	44	Short Horns Bull, Halton, Description of	220
Parsnips, Enquiries respecting	78	" Kirkleavington, Hord of	267
Pasture Land, Improvement of	109	Siberian Crabs for Hedges	51
Pear Trees, To make bear	50	Silliman, Professor, on the Structure of the Earth	124
Peat Charcoal in the United States	247	Smithfield Cattle Show	10
Pickering Fair	159	Sotham, W. H., On Manures	43
Picture of a Burying Ground	29	Sponge and Flint, Origin of	59
Pile-driving Machine, Naysmith's	93	Steam in Agriculture	241
Plants Propagating by Roots	277	" Value of	119
Ploughing	75	Star-Light	253
Poetry:		Stallion, Prize	96
A Winter Lay	28	Stock rearing	259
The New Year	29	Straw as a covering	242
Character of a Good Wife	28	Strawberries, Treatment of	250
Speak no Ill	61	Strangles in Horse	79
Keep the Heart as Light as you can	95	Stumps, Burning out	199
Rhyme of the Rail	125	Subsoil Plough	140
The Seasons	154	Summer Fallows	171
Flowers	190	Tan as a manure	12
The Forest Trees	222	Tar, Use of, for sheep	111
The Language of Flowers	245	Tapioca	50
Walks Abroad	253	Tail, Sickness, cause and cure	242
Use the Pen	262	Tea Cakes	63
One Story is Good till another is told	317	Telegraphing, Discovery in	282
Sydney Smith's Recipe for a New Salad	318	Telegraph, Keeping Time with the	93
The Branch of Wild Hops that grew over the	348	Tenacity of life in the Polypi	62
Stream	348	Thunder, Effects of	280
Polytechnic Fire	232	Thomson, E. W., Essay on Agriculture	65
Population of Canada	346	Thrashing Machine, Paige's Two Horse Power	235
" County of Hastings	193	Tile and Pipe-making Machine	252
Potato Disease	260, 343	Tomato, Medical use of the	277
Practical Farming, What is it?	82	To our Readers	359
Prairies	95	Transactions of New York State Agricultural Society	30
Provincial Exhibition	244, 265, 230, 323, 331	Trees, Age of	250
" " Prize List	301	Tub Houses	158
" " Plan of Grounds	304, 305	Universe, Wonders of	28
Provincial Association, Remarks on	177	Universal Plough	178
" Prize List of	167	Vail's, G., Imported Heifer "Yarm Lass?"	148
Public Debt of Canada	339	Ventilation, Mr. Rutan's System	138
Queries of a Correspondent . best time for Cutting	270	Washing Machine	121
Hay	270	Washing made easy	252
Baking Machine, Begg's new	273	Waterspout, Destructive Effects of	30
Razors getting tired	237	Water Frozen by Boiling	237
Reaping Machines	80	Water, Its Presence Everywhere	279
Reaper, McCormick's large sale of	236	Water, Operations affecting	125
" Hussey's	240	Wait, T. H., New Plan of Canadian Farming	112
" What they requires to do work	344	Weevil, Remarks of Mr. Hutton on the	243
Recipes	255, 350	Wellington, County of, Report on	161
Relic, A singular	127	Wheat, Low Price of	77
Reports of Agricultural Societies	209, 201	" Cost of Raising	77
" of Middlesex and Elgin Society	229	Wheat Midge and Weevil, Distinction between	269
Rice, Directions for boiling	221	White on Low Price of Wheat, and Remedies	77
Richmond Hill Fair	166	Wild Animals in Confinement	318
Roofs, Flat	255	Wire Work for Ceilings	26
Rose Insects, To destroy	231	Wire Type Company	94
Roses, To protect	111	Wolf Island Agricultural Society	239
Rotation of Crops	257	Wonderful and True	203
Royal Agricultural Society of England	95	Wonderful Provision of Nature	153
Rutan's Ventilating Stove	19	Wood for Fuel	69
" Rejoinder to Carbonic Acid	132	" Wool Grower," Notice of the	295
" Reply to Carbonic Acid	56	Wool from Pine Trees	338
Russia, A Nation of manufacturers	119	" Yarm Lass," Vail's Imported	148
		Yeast	186
		Youth, Example for	95

INDEX TO THE ILLUSTRATIONS.

	Page.		Page
Ruttan's Ventilating Stoves	20, 21	Universal Plough	178
Perspective View of Normal School, U. C.	52	Shepherd's Dog	179
" " of a New England School	54	Hereford Bull	180
House "	55	Short Horn Bull "Halton"	219
Benches for	55	Paige's "Thrashing Machine"	235
Land Presser	74	Smith's "Double Action Hay-maker"	235
Scotch Cart	74	Norwegian Harrow	265
Ayrshire Cow	70	Croskill's "Patent Clod Crusher Roller"	269
Double Plough	76	Roots of Plants	287
Leicester Ewes	111	Plan of Provincial Exhibition Grounds, Toronto, 1852	303
Artesian Well	120	View of Show Grounds for do.	365
Washing Machine	147	" Floral Hall	366
Subsoil Plough	147	" Agricultural Hall	367
Horse Hoe	147	Wade's Durham Calf,	375
Mr. Vail's "Yarm Lass"	149		

THE
CANADIAN AGRICULTURIST
AND
Transactions

OF THE
BOARD OF AGRICULTURE OF UPPER CANADA.

VOL. IV.

TORONTO, JANUARY, 1852.

NO. 1.

PRIZE ESSAY

ON AGRICULTURE AND ITS ADVANTAGES AS A PURSUIT.

BY WILLIAM HUTTON, BELLEVILLE.

[Read before a meeting of the Agricultural Association of Upper Canada, at their Annual Exhibition at Brockville, Sept. 25, 1851: to which was awarded a Gold Medal of the value of £10; given by the Directors of the Johnstown District Agricultural Society.]

"He that causes two blades of grass to grow where only one grew before is a benefactor of his country."—
DR. JOHNSON.

If this motto be true how great a benefactor of his country must be the good practical farmer!

The changes which the power and susceptibility of cultivation are able to effect on the vegetable kingdom, as well as the animal, are truly wonderful. Nature has bountifully and beautifully endowed every vegetable, whether root, flower, or fruit with a certain capability of change, according to circumstances of soil, climate or position;—and the farmer or gardener who judiciously practices upon this power has succeeded, and will ever be able to succeed in rearing products far superior to their natural originals, as to bear but slight resemblance to them. In a state of nature almost all plants are confined to certain localities suitable to their nature in soil or climate, and if allowed to remain uncultivated and unremoved will retain their natural condition; but as soon as removed to a more congenial soil, or a better climate, or even cultivated in their own soil and climate, they undergo a change clearly discernable in their external character in some point or other. In some descriptions of plants the change is greater in their roots,—in others in their leaves and stems; and in others in their blossoms and fruits. By continued cultivation these changes are transmitted through successive races; but if the stimulus be kept up plants again will degenerate to their natural condition. Take as an example the potatoe: This

plant is a native of Tropical America. When found wild the tuber is about the size of a common chestnut and not by any means palatable; but how valuable as food both in quality of nutriment and facility of production is almost beyond calculation! In its natural state there would not be $\frac{1}{4}$ cwt. on an acre, (could an acre of them be found,) but when the farmer applies his power and skill of cultivation, we frequently see an acre produce from six to eight tons, *i. e.* from 240 bushels to 340, in this country, and even much more in the Old Countries. Within the last century the cultivation of this plant has produced innumerable varieties of shape, size, colour, and quality. Sir Walter Raleigh imported them into Britain from Virginia, and directed his attention to their cultivation in his garden in Ireland. It is related that his gardener being ordered to supply the cook with a dish of them, gathered the seed apples or buttons (as they are sometimes called) and had them sent up much to his master's dismay. He had no idea that it was the *tuber* that was edible, and the gardener only discovered his mistake when in trenching the garden for the winter frosts, he turned out the first improved potatoes!

The turnip too is another example of the power of cultivation—it has been changed not only in colour from white and yellow to purple and green, but in weight also, from 2 ounces to 24 lbs! The carrot too, which in its natural state is a slender root of a yellowish white colour about the size of a common quill is now metamorphosed into a deep red or orange colour, about the size of a man's arm! Such is the effect of cultivation and removal to a richer soil, where it meets with all the elements essential to its growth, and where its bed is deepened and softened to admit the easy expansion of the root in every direction.

Plants just like animals have a tendency to reproduce their own qualities in their offspring, and the skilful farmer taking advantage of this feature is enabled to rear such descriptions as best

suit his own purpose, until by continued improvements and successive developments they not only greatly exceed unaided nature, but sometimes become altogether monstrous. The cabbage which in a state of nature has a tough and slender stem and weighs perhaps one cunee; by judicious culture becomes succulent, and changes to a heart or cluster, often weighing from 20 to 51 lbs.: one of that weight having been exhibited in England last year. Wheat, barley, and oats in a wild state are thin and meagre, and of little or no value; by cultivation they become large and plump, and, perhaps, the most important elements of subsistence for both man and beast.

Trees and stems too of all kinds become liable to great changes. The native of the mountain when transplanted in the valley grows with greater rapidity, but the timber becomes softer and less durable; whilst the tree of the valley, when removed to the mountain becomes of slower growth and more stunted form but the timber is tougher and more lasting. I might go on to enumerate the various fruits whose properties are changed by cultivation both in quality, size, and colour, so as to render them almost beyond recognition; such as the plum proceeding from the sloe, the apple from the crab—the peach and nectarine from the almond—the orange and lemon from the lime—the garden cherry from the wild one, &c.; but I have enumerated quite sufficient examples to show very clearly the vast advantage to be derived by efficient cultivation, and the beautiful and merciful adaptation of the nature of the vegetable kingdom to the bountiful supply of the wants and growing requirements, as well as the pleasures and gratifications of civilized man, if he only exert his industry and skill to cultivate.

Perhaps it would be well now to state what constitutes efficient cultivation of the soil, taking it in an AGRICULTURAL point of view, in the enlarged meaning of that word.

As the famous authoress of the *Cookery Book*, Meg Dodds, in describing how to cook a hare, begins with, "First catch the hare," so perhaps I may say, First get the farm, and let it be such a one as is best suited to the means of purchasing and stocking, and to the amount of capital and labour which can be brought to bear upon it. The larger the extent of cleared land, the smaller proportionate capital will it require:—Thus a farm of 150 acres cleared may be managed (after having secured the freehold) with a capital of 20s. per acre; whilst a farm of 50 acres will require 30s. per acre, supposing both farmers to be proprietors of the soil, and *working* men. If not working men a larger capital will be required, and the returns will be much less. There are very few farms in Canada that would support an idle would be gentleman.

Having procured the farm, (always supposing it to be partially cleared,) perhaps the first and most important of all agricultural knowledge is that of a proper rotation of crops, suited to the soils under cultivation.

ROTATION OF CROPS.

I set out with an assertion that may be new to many, but which I believe is perfectly correct and borne out by experience, that naked summer fallows are, in a general way, extremely injurious to the soil and ought not to be tolerated, except where there are stumps or stones to be removed, for doing which there is not time enough except during the summer months. The exposure of the soil to the heat of the summer sun weakens its vital powers and exhausts its richest properties. If light land the exhalation renders it still lighter; if heavy land it extracts vegetable juices and leaves it less nutritious than it would have been if protected from the sun. In the best agricultural countries in Britain the naked fallow is abandoned and the land is kept clean by a constant succession of drilled and heavy smothering crops. For this purpose the five course husbandry is very generally followed, (perhaps more so than the four course, which is also very much adopted) under the five course husbandry one fifth of the farm is each year occupied as hereunder described:—1st, Drilled crop, Turnips or Potatoes; 2nd, Barley; 3rd, Clover meadow; 4th Pasture; 5th, Wheat, or Beans; varied occasionally to 4th, Wheat, 5th, Oats; though it is not approved to sow two grain crops in succession. This beautiful system keeps the land always in prime condition, and no one crop being too often repeated, the properties of the soil necessary for its growth are not exhausted, nor too large demands made upon the particular properties requisite for the growth of particular crops. Perhaps in Canada it would be impossible to follow this rotation because we have not the artificial manures, such as bone dust, oil cake, guano, &c., to cultivate so large a proportion of drilled crops; but we ought to approximate to it as much as possible, and at all events endeavour to avoid naked fallows except where absolutely necessary. The expense of naked fallows unaccompanied for one year by any return—the two years' rent or interest of purchase money which is just the same, the extra plowings and diggings, which effect no more in the way of cleaning than a good smothering crop, all these are such heavy drawbacks from the profits of the wheat crop, (costing—independent of manuring, which would have to be done at any rate—at least 25s. per acre,) that every farmer should avoid naked summer fallowing as much as possible. To avoid the necessity for it, the manure for the drilled crop might be got out in autumn and plowed down as soon as it is drawn out, and the land will

then easily be made ready in the earliest spring for early planting or sowing of the drilled crop.

Perhaps under the peculiar circumstances in which we Canadian farmers are placed, the six course husbandry is the most advisable, though I think before many years elapse the more improved five course system will be generally adopted in the old cleared farms, where summer fallowing can be dispensed with.

The six course husbandry may be thus designated:—1st, Drilled crop of all kinds; 2nd, Spring wheat, or Barley, or Oats; 3rd, Clover Meadow; 4th, Pasture; 5th, Peas; 6th, Winter wheat.

If there be not enough of manure to put one-sixth of the cleared farm under drilled crop, the part left might be sowed in Buck Wheat, and plowed down, so that the land might come in with the drilled crop. The Buck wheat, if there be any necessity to have recourse to it, should be sowed in June and plowed down late in July and the land carefully rolled when the wheat is up, to pack the Buck wheat close, as the wheat is apt to winter out if the land be not rolled.

The wheat crop will very probably not be as good as after the drilled crop, but this is the best substitute that I know in such an emergency, and better than naked fallow, as it gives a good supply of vegetable matter to the soil instead of exhausting its properties under a summer's sun. In speaking of drilled crop I would observe that, from long experience I am convinced of the fact, that in our cold climate turnips, mangel wurzel, and such succulent food does not convey the same degree of benefit to cattle that the same money's worth of grain conveys. Grain is much more warming and bracing to the system, and cattle of all kinds thrive more upon one bushel of Indian Corn than they would upon three bushels of Turnips or Mangel. The hope of fattening cattle successfully in this climate upon Turnips (even the best Swedes) without giving a good deal of grain or Canale is now nearly abandoned; and in fact the price of beef in general, is so low, that farmers have not much encouragement to grow either turnips or grain for this purpose; less than 25s. per 100 lbs. for beef, would not pay the farmer the expense. But whether for fattening purposes or for sale, is the drilled crop most worthy of our encouragement, if the land be well manured the Fall and Plaister judiciously applied, it is not so uncertain a crop as many people imagine. The seed should be all in the ground before the 28th of May, having been previously steeped for 24 hours, and rolled in plaister, which is certainly a very powerful stimulant and a great expeditor of its growth, and the sooner it is well out of the ground the sooner it escapes its numerous enemies, and if the manure be all drawn out and plowed down in Oc-

tober and November, it is quite possible to have it all planted thus early. The plan of planting Indian Corn in drills, instead of in hills, is now much adopted and with excellent effect, as very much labour is saved,—the plough and drill harrow being all that are required for cleaning; and the crop is equally good, and often better, if the seed be put in about six inches apart and the drills about 2 feet 8 inches asunder,—this requires a little more seed but that is of trifling moment. In the neighbourhood of Colborne and Grafton, this plan is pursued with excellent effect, and the saving of labour by this method is a very important item. With regard to turnips the Swede is undoubtedly the best, it being a more certain crop—producing a greater weight to the acre, and standing the frost better than any other turnip. The seed should be sown in drills 2 feet 8 inches apart, about the 20th of May, and the land often moved and kept off the bulb, as they grow much faster when kept perfectly free from mould, and having but a slight hold of the ground. Their great enemy is the turnip flea, which eats them off when in the first leaf. The best remedy against the flea is to steep the seed in Tanner's or Rape oil for 24 hours, and dry it with sulphur. This, with a sprinkling of plaister soon after they appear, will expedite the growth so much that they soon get out of the reach of the flea. But I must confess that I prefer Mangel Wurzel to Turnips—they are a much more certain crop—have a greater weight to the acre, and are better for cattle, especially milch cows. The seed should be carefully steeped in soft water 24 hours, dried with plaister and dibbled in about one inch deep and 7 inches apart to allow for failures—if all grow every second plant can be hoed out.

Mangel wurzel was first introduced into England from Germany by a Dr. Lettsom, in or about the year 1797. The meaning of the word is Root of Scarcity, and strange to say, the French name for it is Racine d'Abundance, root of plenty. When the outside leaves begin to fail they may be taken off without injury to the plant and afford a large supply of excellent food for cows or hogs; they also bear transplanting admirably, and the roots if protected from the frost and wet will keep perfectly good till April or May. Many farmers in England sprinkle the young plants, when about 6 or 8 inches high, with liquid manure from their cisterns, which they draw out in water carts,—and the system of saving all the liquid manure in cisterns for the purpose is engaging the attention of the best agriculturists. They put spouts to all their farm buildings so as to carry off the rain, that the quality of the liquid manure may not be deteriorated. It has been clearly proved that this is an admirable plan, and ought to be followed in Ca-

nada, as it is not expensive—and too many of us are extremely negligent in allowing the most fertilizing properties of our manure to be carried off, without an exertion to save it.

Mangel Wurzel should not be moulded up, nor should the mould be hewed away as with Turnips, but the ground should be kept level. It is a plant that requires a great deal of potash in the soil to bring it to perfection, and on that account it is that a small quantity of unleached ashes applied on each hill, has such a wonderful effect in expediting its growth.

PLOUGHING.

Having considered the proper rotation of crops, it may be well to say a few words about ploughing, and thanks to our Association and Branch Societies, this department is pretty generally understood. The old system of ploughing 10 or 14 inches wide and laying the furrow quite flat is, I think, almost entirely abandoned;—6 inches deep by 9 inches wide is about the proportion, and if properly turned, leaves the furrow at an angle best calculated for covering both grass and seeds. The Prescott plough, one of which has been sent to the Great Exhibition, is probably as good as any we have. The weight of draft in it is less than in many in common use, and it turns the furrow at the best possible angle. The mould-board cleaning itself immediately over the whole surface, showing thereby that the friction is equally divided over the whole mould-board, and the draft consequently light upon the horses. As to the time of plowing it seems evident that only summer fallow, or only drilled crop, or perhaps a bit of stiff sod, should be ploughed in the autumn. There is always a better crop of grain upon what is termed a hot furrow, *i. e.* new turned, and great care should be taken that no land should be ploughed wet, at least in the spring of the year. If clay land be ploughed wet it requires double or treble dragging, and nearly double seed, and after all the extra seed and labour, the crop is never so good as when the land is ploughed dry, even if it should be 8 or 10 days later. If gravelly land or sandy loam be ploughed wet, the effect is not so bad, but the vegetation is not so rapid as when ploughed immediately before sowing, nor is the crop ever as good. Patience is often a great virtue with the farmer in the spring of the year. It often happens that farmers plough their *summer fallows* early in spring, when they think the land too wet to plough for a spring crop; but they universally have to lament their ill judged haste; the land is more difficult to labour through the summer than if they had waited patiently to turn a drier furrow; the fallow cannot for that reason be got into as good order as if a little judicious patience had been exercised in the early spring

SOWING.

First, as to thick and thin sowing. From many years' experience and intimate knowledge of Canada, I am convinced that farmers do not sow thick enough. As to wheat and oats for example: if thin sowed on rich land the young plants will stool out or tiller very much, showing that nature makes a great exertion to supply the want of seed, and every farmer will observe that each shoot as it becomes further removed from the parent stem becomes weaker, and the produce more and more deficient, and more liable to disease, such as smut, mildew, &c.; and they will further observe that every outshoot from the parent stem is more subject to disease and weaker than the parent itself. In 1850, in a field of ten acres, I tried two average acres with a double cast of seed, sowing about $3\frac{1}{2}$ bushels to the acre, and I was delighted to find at harvest, that on this land, thus thickly sowed, the crop was fully one-third better than any other two acres in the field; there being more parent stems, the heads were prouder and came all to more equal maturity; the capabilities of the soil were more equally diffused, and the result showed so very much in favour of thick sowing that I am led strongly to recommend the practice. It is too much the custom in Canada for farmers to calculate what return they have from the bushel of seed instead of from the acre of ground. If they put in more seed they might have a smaller return *per bushel*, but they would have a larger return *per acre*, which is the great desideratum. I have this year sowed 4 bushels of oats to the acre, and I am confident there is not one grain too much; the soil is heavy clay, but even on rich loam I would recommend the same quantity of seed;—the experience of the old countries is, that that quantity is not too much there, and I know of no principles by which our cleared lands would require less seed than similar soils in England. Having farmed many years very extensively in the Old Country, I always sowed $3\frac{1}{2}$ bushels of good wheat, and four of oats (weighing 40 lbs. to the bushel) to the acre, with the best possible effect. The land too, is not nearly so much exhausted by growing a thick crop as it is by growing a thin one, even if the acreable produce were the same, which is quite possible, but of rare occurrence. The same principle holds good in the sowing of clover. If much grass seed is not sowed with it there should be 12 lbs. per acre sowed; and this is the quantity always sowed in the best agricultural counties of England; and perhaps for this reason—there the custom prevails to a great extent, to plough down the aftermath or second growth when about 8 inches high, and sow wheat upon it, and I have seen splendid crops from such practice; but where

this custom prevails the clover is never kept a second year, it is either mowed and the second growth ploughed down for wheat, or it is pastured till October and then plowed down. This is called the four course husbandry, viz: Turnips, Barley, Clover, Wheat or Beans; an admirable system in the Old Country, but beyond our reach. The result of experience then shows that *thick* sowing of grain to a certain limit, is far more profitable than *thin* sowing. Though the seed may cost a little more, the acreable produce will be much greater in proportion. Every skilful farmer can easily ascertain what that limit is. The best and cleanest grain should be always used for seed as the shoots from such are always the strongest, and a constant renewal of seed is absolutely necessary to ensure an abundant crop.

After sowing, or rather after the grain is well up, there should be a free application of the roller, not only to level the land for the cradle or scythe but to retain the moisture in the soil, and mould the plants; and in the spring of the year, as soon as the land is dry enough to carry the horses without injury, all the winter wheat should be well harrowed to break the crust of the soil, to mould the plants and to admit air and moisture to the roots. Experience has fully shown that in every description of land, the free application of the harrow to winter wheat in spring, has a most beneficial effect, and the fear that most farmers have that the harrow will tear up and injure the wheat is most unfounded and absurd. Let every farmer but try a small piece one year, and he will undoubtedly harrow all he has every spring afterwards during his life.

This year, 1851, I had a field of wheat so much wintered out that I sowed spring wheat over it, and though well dragged four times over with a very heavy drag, the few spots that were not wintered out were benefitted, instead of being destroyed: but at all events, one good close bout of a heavy harrow is essentially beneficial.

DRAINING.

I should, perhaps, have observed before, that to secure good wheat, good draining is indispensable. By good draining I would not pretend to recommend tile draining, or covered underdraining, such as is found necessary to have in England or Scotland, except in peculiar localities. We do not require such in our dry climate, and the expense being from £4 to £6 per acre, exclusive of tiles, say in all £10 per acre, would overrun the advantage. In damp soils and situations it will be generally sufficient to ascertain the source of the spring, and by one good deep drain intercept the supply and cut it off. As a general rule this with good and judicious water furrowing, and a few surface drains will suffice. Neither our increased crops, nor prices, nor profits, would remunerate us for expensive draining: nor does the climate require it, except in a few local instances, and the farm that requires much expensive draining is

not worth having. I have never yet heard of any farmer in Canada, who is able to realize for five successive years, a net annual profit of 20s. per acre, over his whole cleared farm, i. e. after deducting seed and labor, (his own included) and the interest of the acreable value of the land: and I know of no land that would pay for expensive draining such as is done in the old country. If a farm require it, except in a few local instances, the owner should rise up and leave it: our average acreable produce, under the best circumstances, will not warrant a heavy expenditure of any kind. Even with the greatest skill and caution, our crops are too precarious to repay extensive outlay. Those who succeed best amongst us are those who do as much as possible within themselves, not employing much external aid, not laying out money for which they cannot calculate a certain return. This year, 1851, for instance, the finest wheat on the finest, richest and best drained soils is deteriorated fully one third, over all Canada, by a severity of spring and winter weather, which it would have been impossible to guard against, or even to foresee, and this is by no means uncommon. The greatest of all skill in farming is "properly to adapt our expenditure to the certainty or uncertainty of our returns." Those cannot be called *improvements*, the result of which will not pay for their completion; a real *practical* farmer will not enter into them. Theoretical farmers sometimes do commence expensive operations, but as soon as their money is gone they become practical farmers, sometimes buying their practical knowledge at a ruinous price.

Far be it from me then to recommend expensive draining, or expensive operations of any kind, on a farm in Canada; but it is a very important branch of a farmer's knowledge to be able to cut off the greatest body of surplus water by the least expensive means—this knowledge can only be attained by attentive observation and experience. I think, generally speaking, we do not lay out our ridges small enough; in heavy or flat land I always find that the grain on narrow ridges is the best, and recommend about nine feet as a proper width, and in no case, except on very sandy and porous soils, ought the ridges to exceed fifteen feet, in all cases to be rounded off, i. e. never flat in the centre or sides.

MANURES.

The time is much too limited to enlarge upon their variety and importance; the first great principle is *never to exhaust the land by severe cropping*; and the next great principle is to restore to it, in some shape or other, the properties which we have abstracted—by the system of cropping which we have pursued. We all know that manure benefits the land, but the thing is to know the why and the wherefore. Newton knew that an apple would fall to the ground, but it cost him years of study to know *why* it fell. So will it cost us farmers much time and attention to know what manures or stimulants or correctives are required under varying influences; our knowledge is but yet in its infancy; one thing, however, we do know, that almost all the strength of animal manure is in the urine, and not in the feces; and another thing we know that we are not by any means

careful enough in preserving this, the most valuable ingredient. The scientific farmers of the old country are taking every possible means to save the urine—making pits for its reception. I may safely add we ought to “go and do likewise,” using many other schemes for this purpose.

ONE WORD ABOUT STOCK.

It appears to me to be one of the greatest inconsistencies, and indeed absurdities with which we farmers can be charged, that we have individually and collectively, as Societies—taken much pains and incurred much expense to *improve* our breed of cattle, without making a simultaneous movement to procure the succulent food, the increased shelter, the extra supply of clover hay, without which these so called improved breeds certainly produce no improvement to the farmer. Without turnips or Mangel Wurzel or shelter or lay, our old Canadian cows are infinitely superior to any of these fancy breeds; they produce more milk on poor feeding—they stand starvation much longer—they are better suited to our climate, and are in every way better—unless we change our system of feeding, and furnish warm and comfortable housing; if we were to furnish these for our native Canadian cows, it is doubtful whether they would not in the end pay the farmer better than either the pure Durhams, Devons, or Herefords. Of these three I think the Herefords are the best for us, and the Devons the next best; the Durhams are evidently and deservedly going out of favor. The Devons are best for dairy purposes. The Herefords for beef and working oxen, and are hardier than either of the others, and have better hides, which is a matter of some consideration.

SHEEP.

As for sheep, there are none better than are to be found all over the Upper Province, we are not surpassed in any part of England, nor can there be a better sheep for our purposes than the Leicester and Southdown crossed, if only the cross could be kept pure and not too long intermingled. At the late shows of this Association, there have been sheep submitted to inspection capable of competing with the sheep of any country in the world, whether in weight of carcass, quality of wool suited to the wants of the country, or excellence of mutton.

The only thing that appears to call for special attention is to renew every four or five years for the pure Leicester, and pure Southdown; as in that time they begin to deteriorate, or in common phrase “run out.” Such indeed is the case with the best breeds of every thing else; and the same is the case with grain and seeds of all descriptions. In fact all nature, whether animal or vegetable, seems to delight in congenial change.

The stall feeding of sheep is, I think, a branch that might be attended to with profit, more than the stall feeding of oxen. The Yonge street farmers supply the Toronto market; and it is said at pieces very remunerating. Some spirited farmers are in the habit of keeping their fattening sheep in a good yard by themselves during winter, and feed them three times a day with cut turnips and chaff, and occasionally some corn

ground with the cob, which are put in a manger placed against the inner wall of a warm shed, both yard and shed being well littered: for these they get from 15s. to 20s. each, which pays pretty well. Professor Playfair, of the Royal Agricultural Society of England, has proved by repeated experiments that five sheep fed under a *dark warm* shed, consumed less than one half the quantity of food consumed by five fed in the open yard or field, with an increase of 4lbs more mutton during six weeks. The argument drawn from this was that warmth in winter is an equivalent for food, and that the protection afforded was equal to a certain amount of turnips, and that, therefore, food may be economised by protecting our live stock from cold and wet during winter. The result of these experiments reads an important lesson to Canadian farmers. The railroads will before long almost equalize the price of beef or mutton, over the whole continent; let us be up and doing.

AGRICULTURE AS A PURSUIT.

The advertisement of the Johnstown District Agricultural Society, having specified that the medal is to be given not only for the best essay upon agriculture, but also *upon its advantages as a pursuit*; it may not be unadvisable to say a few words on this subject, though the scope for observation is very large, and the time allowed for reading the essay very limited. To comprise as much as possible in a small space, these few observations will perhaps meet the spirit of the resolution.

I would first observe that the amount of capital invested in the pursuit of agriculture, is safer than that invested in mercantile pursuits.

It is very seldom indeed that losses ruinous in their effect occur to the Farmer; whilst the merchant may by the loss of vessels, or by the constantly recurring fluctuations of trade, in one day lose the earnings of a whole life of industry, anxiety and care. It is a fact long since established and well known to a great many of our old inhabitants, that at least ninety merchants out of every hundred have failed and gone to the wall, whilst they themselves have stood the brunt of the severest storms—preserving their old homesteads not only unimpaired, but year after year improved and surrounded with increased external and internal comforts. The immense wealth accumulated by a few individual merchants is the exception to the general rule—not the rule.

The farmer, it is true, can never accumulate what is called a splendid fortune; but in this country particularly, he is seldom, if ever, reduced to poverty; he is in truth always in a position to feel that degree of independence which very few manufacturing or commercial men can arrive at; and occupying as he does such a position, his pursuits are not (as some professional and commercial men would have us believe) incompatible with the character of a gentleman or a man of education. It is utterly impossible for him to understand the chemical analysis of the soil upon which he treads, or its adaptation to the different crops which he wishes to cultivate, unless he be educated. I do not mean that edu-

cation by which he can conjugate a Latin verb or dive into the classical lore of the dead languages, but that ten thousand times more important education for him, which will enable him to aid the functions of nature by the judicious and well-timed application of stimulants or correctives, or enriching substances, suitable to the varied requirements of the diversities of soil which every farmer meets with us in his agricultural career.

The idea "that any fool can farm" is now antiquated and an unjust stigma on our noble profession, one of the first advantages of which, as a pursuit, is, that it requires enlightenment; that it demands never ceasing improvement of our mental capacities, which tend to raise us in the scale of intellectual, therefore, happy beings—"Agriculture can only be carried out economically and successfully when treated as a science, nay, as the most important of all sciences, teaching the mode of raising food for the whole human race. Take for example, wheat. Science informs us by carefully analyzing the grain and the straw, that each contains certain mineral elements in certain clearly defined proportions. The inference must be that these elements are essential for its successful growth, and science by analyzing the soil will inform us whether it contains what is necessary to insure this growth, and by showing us in what property the soil is deficient will enable us to supply that deficiency in the most economical way, without wasting materials which may not be required, being already existing in the soil in sufficient quantity. Professors Way and Johnston have lately given to the agricultural world most important information as to the properties in the soil that are required for the successful production of each kind of grain, roots and pulse, which we are in the habit of raising; and the quantity of each of these properties which a good crop takes from the soil, and the easiest way of returning that property to the land, so as to maintain its fertility unimpaired. This is certainly a great triumph of science; let us hope that an agricultural Professorship in our Provincial University, will diffuse this knowledge over our rising agricultural community.

Another important consideration, being perhaps a local one, (or colonial if you will,) is this:—that in this country, where every farmer is the owner of the soil which he cultivates, he is called upon to exercise a lively interest and influence in the management of the internal affairs of the country and its general government. The capital of the merchant or mechanic being embarked in commerce or manufactures, he seldom becomes interested as a proprietor of the soil, and is seldom called upon to interfere in local affairs, the conducting of which is on that account left chiefly to the control of the farmers. Being then the lords of a rich, bonny soil, and having the power to wield the destinies of our country, may we not be justly proud of our profession, and be zealous to adorn it in all things by industry and skill, and advancement in knowledge, practical and scientific.

Another advantage in the pursuit of agriculture

as contradistinguished from that of merchandize or manufactures, is the increased health and happiness of those who are not crowded into narrow spaces, but have ample fresh air and light around them. The annual mortality in large towns is much greater than in the country. In many of the counties of England the mortality is one in forty-five, whilst in large towns it is one in twenty-eight.

Thus it is seen, says Professor Guy, that mortality increases in the ratio of crowding, and many crowded parts of cities combine in a frightful degree all that is most offensive to the senses, most revolting to the feelings, most injurious to health and most fatal to morals. In one single metropolitan parish he shews that the gentry who inhabit open squares and broad streets live on an average 40 years, while the manufacturing and working classes who inhabit narrow lanes and dark cellars live only 17 years; and the country population live to the average age of 45 years; thus showing most distinctly the great advantage of a farmer's life in contributing both to health and morality; and most assuredly with them to increased as well as prolonged happiness and comfort and extended usefulness of life.

And finally I may observe that the very nature of the farmer's occupation, which leads him daily and hourly to contemplate the surpassing beauties of the animal and vegetable kingdoms, and their striking adaptation to the wants and requirements of man, lead him more than the townsman, more than the mechanic, more than men of any other occupation, to look through Nature up to Nature's God: to admire his works and to look with grateful dependence to Him for the continued supply of his bounty. The beautiful vicissitudes of the ever going and returning seasons, and the constant variations of climate remind him, above all others, that "though Paul may plant and Apollos water, it is God that gives the increase." And is not this a great advantage of the Farmer's life? And do not our gaols and our Law Courts attest that, above all others, the Farmer's life is the moral life, and therefore the happy life: and no one will deny that above all others, it is the useful life. For if "he be a benefactor of his country, who causes two blades of grass to grow where only one grew before;" how useful and materially important must be the life of the intelligent and industrious farmer!

Board of Agriculture of Upper Canada.

ESTABLISHED BY STATUTE 13 & 14 VIC. CAP. 73.

MEMBERS 1851-2:

E. W. Thomson, Esq., Toronto, Chairman,
 Hon. Francis Hincks, Inspector General, Quebec.
 Hon. Adam Fergusson, Woodhill.
 Henry Rutan, Esq., Cobourg.
 R. L. Denison, Esq., Toronto.
 David Christie, Esq., M.P.P., Brantford.
 J. B. Marks, Esq., Kingston.
 John Harland, Esq., Guelph.

Geo. Buckland, Secretary, Toronto.

OFFICERS OF THE AGRICULTURAL ASSOCIATION OF UPPER CANADA, 1852.

PRESIDENT :

Thomas Clarke Street, Esq., M.P.P., Niagara Falls.

VICÉ PRESIDENTS :

William Matthie, Esq., Brockville.
C. P. Treadwell, Esq., L'Orignal.

EX-PRESIDENTS :

E. W. Thomson, Esq., Toronto.
Hon. Adam Fergusson, Woodhill.
Henry Rutten, Esq., Cobourg.
J. B. Maras, Esq., Kingston.

TREASURER :

E. L. Denison, Esq., Toronto.

BANKERS :

Bank of Upper Canada.

SECRETARY :

George Buckland, Esq., Toronto.

SEEDSMAN :

Mr. James Fleming, Yonge Street Nursery, Toronto.

The next annual Exhibition of the Society, will be held in Toronto, Sept. 21st, 22d, 23d, and 24th, 1852.

DONATIONS TO THE LIBRARY AND MUSEUM OF THE BOARD OF AGRICULTURE.

The Secretary of the Board of Agriculture respectfully acknowledges the following books and specimens from FREDERICK WIDDER, Esq., COMMISSIONER OF THE CANADA COMPANY :

The Flax Grower, by G. Nicholls; Dickson on Flax Management; Warnes on the Flax Crop; Claussen on the Flax Movement; Flax—its manufacture on Schenck's Patent System, by Bunsard and Koch; Deman on the culture and management of Flax; and Claussen's Prospectus of Patent Flax Company. Also 4 packets of dyed cottonized Flax; 2 specimens Flaxen Cotton; 2 do. Flax spun upon Cotton Machinery; 1 do. mixture of half Flax and Wool; and 1 do. Flax Flannel.

The above publications and specimens have only just arrived from England, and it is Mr. Widder's desire that a plain and practical series of papers on Flax culture and management, be prepared from these works, for publication in this journal.

All who feel an interest in the enduring welfare of this country will learn with pleasure, that it is Mr. Widder's intention to import from England, *Chevalier Claussen's newly invented machine for dressing flax*; which he hopes to exhibit in working operation, at the Provincial Agricultural Show, which is to be held in Toronto next September.

We have thus had the pleasure of again recording tangible proof of the enlightened views and liberal disposition of the *Canada Company*, in promoting the improvement of this young and rising Colony.

REGISTER OF PURE BRED STOCK.

Parties possessing blood horses, on any of the pure breeds of cattle, may have them registered in a book provided by the Board of Agriculture, by sending to the Secretary a correct and satisfactory pedigree, traced either to the English or American Herd and Stud Books. Such certificates must be properly authenticated, and written in a plain, readable hand.

The Agriculturist.

TORONTO, JANUARY, 1852.

A WORD TO OUR READERS.

We enter on our Editorial duties at the commencement of the New Year, with the encouraging feeling that brighter prospects and more extensive usefulness await our humble and unpretending sheet. The contributions which we expect to receive from time to time, through the Board of Agriculture, will undoubtedly be of a nature to give a much higher character to this Journal for practical utility than it could have previously possessed.

It will be our pleasing duty to record the state and progress of the numerous Agricultural Societies in this section of the Province, and to register such facts as indicate the advancement of our domestic manufactures, (which must every year assume greater importance,) and commercial operations. Canada is but just awakening to a consciousness of her immense resources and progressive capability. We are singularly blessed with a fertile soil, a healthful climate,—water-power, lake and river communication, unapproached by any other known portion of the world. In addition to these great natural advantages, we enjoy the inestimable blessings of free institutions,—not an inch of our soil being polluted with the breath of slavery,—and are animated by the feeling so congenial and ennobling to the mind of every true British subject, that we form an integral portion of that great Empire of freemen—unparalleled in the world's history,—upon which "the sun never sets."

The vocation of the "*Agriculturist*," is, as its name denotes, to improve and render more productive the cultivation of the earth; and the adjective, "*Canadian*," prefixed, marks the limits of the field within which its labours are expected to be confined. As we shall now be

regularly in the receipt of the best Agricultural Journals of the United Kingdom, as well as of the neighbouring States, we shall study to keep our readers informed on the general progress of the art, by condensing articles of substantial merit; especially such as contain matter that can be made practically useful in this country. We hope to receive such a degree of encouragement as to justify an outlay for original Engravings of new implements and machines, improved breeds of cattle, &c., adapted to the wants of Canada. In a word, these and other improvements, which we have in contemplation, will mainly depend for their realization upon the patronage extended to us by the public. The extremely low price at which the paper is available to Societies, may be made instrumental in adding largely to their numbers; and it is in this particular way that we feel most desirous to make our journal serviceable. The Agricultural Societies of Canada have but just commenced the great work, which it is their mission to carry forward indefinitely. Our duty will mainly consist in offering in our periodical Visitations, a word of encouragement and instruction; and to record faithfully the actual progress made.

Although several of the numbers of this paper must necessarily contain, during the year, articles somewhat lengthy, comprising substantial matter that will, we trust, well repay a careful reading and digestion;—nevertheless we hope to be able to enrich each number, more or less, with short and miscellaneous pieces, original and selected, that will be of use either in adding to the material comforts, or improving to the minds of the various members of the domestic circle. And although our work is mainly and essentially material and secular, it is our earnest desire to conduct it in a spirit favourable to human progression and brotherhood, in reference to the higher and more enduring wants of man;—and whilst tracing the sequences of nature, as every hour exhibited to the intelligent and observing Agriculturist, we shall not consider ourselves precluded giving utterance to the appropriate reverential expression. With this hasty and imperfect statement of our plans and objects, and of the spirit in which we desire to carry them out,—we beg to close our remarks by wishing our readers,—one and all,—*a happy and prosperous New Year!*

AGRICULTURAL OPERATIONS FOR THE MONTH.

Having by this season of the year got pretty well through the most hurried work of the Farm, fill up your leisure by preparing fire wood for the

remainder of the winter and the coming summer; for scarcely anything can be more annoying than hauling wood during the muddy roads of Spring, or the hurried time of seeding, haying or harvest. And what man or master likes to hear the females complaining morning, noon and night of scarcity of wood,—and I know some that have had experience in this matter.

Another and very necessary occupation is the procuring of fencing; for what farmer does not require to renew or build new fences every year more or less? Bad fences injure the owner in more ways than one. They will cause your crops to be destroyed, and worse will teach your young stock to jump them, and then all fields, ill or well fenced, are in danger, for who amongst you have never met with a confirmed old breachy horse, ox, bull, or old ram, or even an old sow. I had an old favorite cow [because she was my first] that became so bad she would open almost any door or gate; and at last my only protection was to put a bell on, to tell her where-about, and then run. If your rail timber is too full of frost to split now, haul it where you will require the rails, and split it early in the spring. You will find this the best time for the purpose, for you can go about the woods and swamps with a sleigh, which is more convenient for the purpose than a wagon; and you can cross your fields in any direction without injury to your young wheat or meadows.

And if you want a straight and cheap fence, plant cedar or oak posts of 5 feet long, 6 inches in the ground, in a straight line where you require the fence, dig a ditch eighteen or twenty inches wide and twelve deep on each side, and eighteen inches from the post, taper up the earth to about fifteen inches wide on the top, and nail two boards of twelve inches each, and five inches asunder, on the posts; encourage grass on the slopes and shovel out the ditches every spring, repairing the embankments; and this will prove a good fence, and also a *drain* to open furrows into, and quite out of the way and with little waste of land. I have such a one on my farm, and I like it very well.

Look well after your cattle; keep them warm but well ventilated; feed regularly and waste not, for you will find it long till pasture, however well your Barns may be filled just now; unless like some farmers I have met with, who turn their cattle into the fields and woods as soon as the snow is off the center of them, leaving a white border round the fences and hill sides. Look well after your sheep; prepare a shed open on one side and that the least exposed is the best for them. I know a close building is not good; and if you expect early lambs be careful to select such ewes from the flock, and keep them in a warm place; for although early lambs are troublesome, they are valuable. Old ewes are best for this purpose, for they are generally better mothers; and then after the lambs are killed, they have time to fatten and be killed too.

Keep working down your straw stacks, under the young stock, as they are generally kept out, or your dung will not be fit for use, as I see a great many old straw stacks standing for years. It is an important principle in good farming to

convert straw, litter and all kinds of vegetable matter, as soon as possible, into manure for the spring and summer crops.

The weather during December has been unprecedentedly severe, and domestic animals ought to receive proportionate attention and suitable food. Fortunately last year's crop of hay was abundant, and in this section turnips &c. were plentiful. In very cold weather much food in the shape of uncooked roots is not good for cattle, and in Canada, we have not yet got into the way of cooking for the brute creation, as in the old country; but our turn will come by and by.

Ploughing was carried on pretty generally till the last of November. I ploughed till the 25th, and on the 26th we had a slight fall of snow, making sleighing very general till the 28th Dec., during part of this time, from about the 18th, the frost was more severe than I almost ever remember, indeed I am told greater than any time during the last thirteen years, the bay of Toronto was frozen as far out into the lake as I have ever seen, the steamers landing their passengers on the ice a mile or more from the entrance to the harbour; but all appearance of that severity has vanished, the ice receding far into the bay, and the roads all mud, and on the 30th we had quite a storm of thunder and lightning, accompanied by heavy rain. The thaw continued till the last day of the year, but on new year's morning all was frost, the ground frozen hard again, and unless we have some snow soon I fear the wheat will suffer, though it is now looking very well.

Before I close these remarks I would like to call the attention of our farmers and breeders to the subject of our Herd and Stud Books.

The Board of Agriculture for this section of the Province at their last sittings, voted a sum of money to purchase the British and American Stud and Herd Books, and Blank Books to record the pedigree of the improved Stock of this Province. With a view to facilitate such register the pedigree of all pure stock in the Province, if properly certified, and sent to Geo. Buckland, Esq., at the office of the Board in Toronto, will be entered without charge for the present.

This is a privilege that I think will be appreciated by all Breeders, and I have no doubt out in a short time we will have quite a handsome commencement, "considering our youth." I know within the last year there has been a large quantity of good stock imported into this Province, and I believe Mr. Huntingford, of Woodstock, alone imported for himself and friends about 8 or 10 Blood horses and mares, I suppose with a view of sustaining their good name in the west, when they shall have the Provincial Agricultural Show there, which I believe is promised them as soon as they have their Railroad completed.

R. L. D.

Township of York, Jan. 3, 1852.

MACHINE FOR DIGGING GUANO.—Mr. Souther, of the Globe Works, Boston, has completed one of Otis's Steam Excavators, an American invention, which is to be employed on the coast of Peru,

in disintegrating the beds of Guano, an operation which it is said it will perform with great facility. The machine is spoken of as a great triumph of mechanical skill. It is capable of taking up three shovelful of loose gravel in five minutes, the shovel holding from a yard to a yard and one half, cubic. It is estimated that with it two men can easily perform the same work, in the same time as would require one hundred and fifty common laborers.

THE SMITHFIELD FAT CATTLE SHOW.

The annual meeting of this long established and prosperous Society was held in the Bazaar in Baker Street, on the 9th and 10th of December; and, from the accounts which have reached us, it appears to have been in no way inferior to former exhibitions, except the number of animals exhibited being somewhat smaller. The attendance of visitors was very great, and the breeding and fattening qualities of some of the stock are said to have been, upon the whole, superior to preceding years. The extreme fatness, almost amounting to actual disease, formerly observed at these Shows, has of late years undergone a wholesome reformation; but even now many animals are exhibited whose fattening condition has been carried to an extent scarcely compatible with their adaptation for nutritious food, and certainly not with profit to the producer.

The Herefords appear to have fully sustained the high and increasing reputation which they have been progressively acquiring for several past years, and they carried off a large number of prizes. The Devons scarcely come up to an average, although certain new arrangements made in the classification are said to have been favourable to their chances of success. The short-horns neither were quite so numerous as usual in some sub-divisions, except in fattened cows and heifers, which both in number and quality far distanced, as might be expected, any other breed. The mere number of prizes, however, drawn by any particular breed for fattening qualities only, is no certain proof of its general suitability to all situations, and for all purposes. The pure bred short-horns, we think, take them all in all, will endure as many, if not more tests than any other established breed.

In sheep, the Leicesters maintained their usual high character; and, for long wools, the Cotswold may, perhaps, be ranked among the best. The Duke of Richmond, President of the Club, carried off the first prize for Southdowns,—a class that figured very favourably. The Pigs were nume

rous, and generally of superior quality; Prince Albert (who also won prizes for cattle) obtained the 2nd prize for some excellent specimens of the Bedford and Suffolk breeds.

The number of implements and machines far exceeded any previous occasion, and this department alone constitutes an important Exhibition of itself. We observed the names of most of the English manufacturers, and the two American reapers. Hussey's and McCormick's attracted much attention; the former seems to have greatly gained of late in English favour, and bids fair to equal, if not outstrip, its hitherto more successful competitor. Mr. Hart exhibited a new brick and tile machine of novel construction, which is said to be economical and powerful in working. The seeds, dairy produce, and roots, were as usual of excellent quality, and the proceedings terminated, as on previous occasions, with a public dinner, under the administration of the noble President.

LECTURE ON AGRICULTURAL ASSOCIATIONS.

On Friday evening, December 5th, a lecture on "Agricultural Associations"—tracing their Origin, Progress and Advantages, was delivered in the Toronto Mechanics' Institute, by George Buckland, Esquire, Secretary of the Board of Agriculture in Upper Canada. The learned gentleman commenced by adverting to the principle of Association, arising from man's physical and moral necessities. In a state of absolute independence, man was a being nowhere to be found. The necessaries as well as the luxuries of life, in every stage of social progression, are results to which thousands, besides the possessors, contribute their labours. The advantages of men associating together for promoting a common object, were illustrated in reference to religious, commercial and scientific Societies. The results of such combinations have been, upon the whole, highly conducive to the moral, social and intellectual improvement of human society. If so much has been accomplished by the principle of association in diffusing the light of Science and the blessings of Christianity, it could not but be interesting and useful to inquire what advantages Agriculture,—the first and most important of the arts, had derived from the same source. One striking peculiarity marks the farmer's position;—its comparative isolation, which renders frequent personal intercourse, by means of Societies, very difficult, and in newly inhabited countries, almost impracticable. The great diversity found in soils, within even small areas and the varieties of climate, induced by a combination of several causes, all tended to render agricultural experience anomalous and contradictory in the early history of the art. Considerations of this nature will account for the absence of agricultural societies, till population had so far advanced, that

second and third classes of soils were taken under culture, when, in fact, agriculture as a systematic pursuit, may be said to commence.

The first association that attracted public attention, and of which we have any reliable accounts, was established as early as 1723, and called "*a Society of improvers in the knowledge of agriculture in Scotland*": it existed about 20 years, consisted chiefly of landowners, and was the means of reclaiming Scottish agriculture from the extremely low condition in which it then existed. The introduction of cabbages and root crops into field culture, and lucerne and sanfoin for forage, may be traced to the society of Improvers. But the greatest good they did was preparing the Scottish mind for the *Highland Society*, which was instituted in 1784, and in three years after was sanctioned by a Royal Charter;—its objects at first were few and confined to the Highlands of Scotland; they were however, gradually extended, embracing the whole of North Britain, and in 1834, a supplementary Charter was granted, and the name of the association altered, expressive of the enlarged sphere of its operations, to *The Highland and Agricultural Society of Scotland*. It is not too much to say that this venerable society has been the principal means of raising the character of British Agriculture to its present advanced condition, and its influence has been felt in every nook and corner of the empire; and indeed the whole civilised world. Its Annual Exhibitions of Live Stock, Farm Implements, and Machinery, its Prize Essays and Reports, published in quarterly transactions, its liberal premiums for scientific investigations, have all tended to make, what a large portion of Scotland now is, a model of Agriculture for the world. The lecturer attributed the high esteem in which the Scotch agriculturists were generally and deservedly held, both at home and abroad, to the admirable parochial system of education, which had long prevailed in that country, in connexion with its efficient agricultural societies and systems of farm management.

The Board of Agriculture, under the able presidency of Sir John Sinclair, was established in 1793, the justly celebrated Arthur Young being its Secretary. This body received liberal aid from government, and was the means of amassing a large and valuable amount of agricultural knowledge, in the shape of county reports, prepared by able and experienced men, practically conversant with their respective localities. The Board was dissolved in 1815; and if it had done nothing more than bring the searching intellect of Sir Humphrey Davy, into the wide and interesting field of scientific agriculture, in which that philosopher gathered fresh laurels for his brow, it would have deserved well of the British nation.

It may be asked, was England and Ireland doing nothing for agriculture by voluntary efforts during this long period? The honour of establishing and efficiently supporting a great national association indisputably belongs to Scotland, and it was a long time before any analogous society was formed either in England or Ireland. Mean-

time, in England especially, a number of local societies were formed, and in active operation; among those deserving a prominent place is the Smithfield Christmas Cattle Show, which has gone on progressively improving and enlarging the sphere of its operations; and it now comprises every thing of interest to the British farmer, as well as grazer. In 1837, at the anniversary dinner, its president, the late ever to be honoured Earl Spencer, proposed the establishment of a national association for England; the measure at once found favour, and next year, 1838, *The Royal Agricultural Society of England* was formed on the same principles as the Highland Society. In a few years the English Society numbered seven or eight thousand members, and promised to outstrip its parent. Its annual exhibitions, Journal of transactions, the encouragement it has given to original research by men of the highest scientific merit, have already done much in advancing the agricultural art in England; and it is not too much to say that this Association is now the most influential, perhaps, in the world.

Ireland was not long behind in this movement. In 1841, *The Royal Agricultural Improvement Society of Ireland*, was commenced, based on similar principles as those already noticed. Its exhibitions have been of a high order of merit, and of considerable extent. The number of District Societies, in connexion with it, has been annually increasing, and a marked improvement in the agriculture of many parts of the county, is very perceptible. The Irish Society commenced the publication of a quarterly Journal and transactions, in 1848, which appears admirably adapted to the wants of the country, and many of its articles in point of literary and scientific merit, as well as practical usefulness, are in no way inferior to the transactions of the two older Societies.

Several countries of the Continent of Europe and most of our Colonies, have Agricultural Societies; and the United States have shown a determination not to be behind in such matters, particularly our neighbour, the State of New York, whose society is one of the largest and most efficient of any in existence. It requires but little penetration to perceive a common connexion running among most, if not all those Societies; they can be traced up to the little unostentatious band of Improvers, that united themselves together in Old Scotia, well nigh a century and a-half ago! This should remind us of a great principle of the natural and moral government of the Deity, that causes and effects are so surely connected, that no judicious effort in a good work, can be ultimately abortive.

In Canada the cause of agricultural improvement was not altogether dormant. Societies for the promotion of this valuable art were formed at a comparatively early period in both Upper and Lower Canada, a few of them more than a quarter of century ago. But in 1845 an agricultural law was passed for regulating the Societies which were springing up in almost all the Counties and several Townships of the Upper Province. The annual grant made by Parliament to Agricultural

Societies must be considered liberal. Still there was felt by the more thinking and enterprising farmers a want of system, and of a Society embracing the whole of the Upper Province. He [Mr. B.] was informed that the Agricultural Society of the County of York [formerly the Home District] has the honor of originating the Provincial Association. The suggestion was made by the President, Mr. E. W. Thomson, at the Spring fair of 1846, meetings were afterwards held in Toronto and Hamilton by gentlemen favorable to the object, and the result was the organization of the Provincial Association; and matters were so expedited that a very respectable exhibition was holden in Toronto in the fall of 1846. The Association held its next show in Hamilton in October 1847, under very great disadvantages as regards weather. Owing to this, and other disadvantages almost certainly attendant on all new projects, the Society had to encounter pecuniary difficulties:—but by the Aid of Government and the zealous support of its earliest friends, it was soon enabled to recover its position, and it may now be safely said that the Provincial Association has already done much good in a variety of ways, and that it possesses the confidence of the country.—At Cobourg, Kingston, Niagara and Brockville, where the successive exhibitions have been held, there have not been wanting ocular proofs of the Society's increasing usefulness. Great moral and social benefits arose out of Associations of this nature; all classes and parties met on neutral ground, for the promotion of objects in which they had a common sympathy and interest; and thus a kindlier and more generous spirit was infused into the heart of the community. Agriculture, intelligently pursued had a direct tendency to enlighten the head and liberalize the heart;—each of its processes involving considerations of the laws of Infinite wisdom, binding man to his race by the experience of mutual sympathies, wants and expectations.

Mr. B. remarked at some length on the advantages likely to arise from the new agricultural statute passed last session, and from the Board of Agriculture, which is just getting into operation. All the Societies will now be connected on a uniform system, and their reports, or the substance of them, annually published. Much interest had been lost to the public mind, with regard to Agricultural Societies, for want of system, and publicity, by means of reports. We have only given a mere outline of the lecture, which was frequently applauded; and concluded with an appeal to the audience to prepare and support the exhibition of the Association, which is to take place in the City of Toronto, in September next.—*Globe*.

USE OF TAN AS A MANURE.—The *Journal of Agriculture* gives an interesting and apparently satisfactory experiment of the fertilising power of *rotted tan*, in the growth of potatoes. The potatoes were either planted on the tan or were covered with it, and the result was that both in quality and bulk, the crop thus treated, was superior to other parts of the field when different kinds of manure were used. In experiments, however, of this kind we are liable to be misled

by the operation of undetected causes. Repeated trials under circumstances well understood and defined are quite necessary to a correct general conclusion.

SHEEP HUSBANDRY IN CANADA.

[We copy from the *Cobourg Star*, the following excellent essay, read at a recent meeting of the members of the *Hamilton Farmers' Club*, by Mr. Hume, one of the members. The present extremely low price of grain renders the subject particularly opportune, and we are sure that our readers will thank us for giving Mr. Hume's paper without curtailment. We must grow more wool, and make more cloth in Canada, in order to prosper. We hope the farmers of other districts will copy the useful example of their enterprising and intelligent brethren of Newcastle, and hold occasional meetings for discussion and mutual improvement during the comparative leisure of winter. Want of space compels us to abridge the observations of several of the speakers;—John Wade, Esq., President of the Club, occupied the Chair.]

Turning my attention more particularly to the subject chosen for discussion at to-day's meeting, its importance at the present moment has been forcibly impressed on my mind, and I feel sorry that the preparing of this paper was not accorded to some hand more able to do it justice; whilst doing my best, however, to open the subject, I trust that my remarks will merely be received as the basis of a more thorough investigation.

Late changes have much affected our position as Canadian Farmers, and whilst, with the rest of the British Empire, we are brought under the operation of Free Trade, we labour under peculiar difficulties induced by the heavy Tariff of our nearest neighbours, acting along with a very restricted currency at home, which paralyzes the efforts of our native industry in its attempts to establish a home market. Industry Canadians have, enterprise too, though, by some, their possession of the latter quality has been denied.

Whence else arises the rapidly increasing exportation of our breeding stock to even the older States of the Union. Whilst those of our neighbours who venture to visit our barbarous shores, seem astonished at the advanced state of cultivation where they had expected to find only a half reclaimed forest. With the political remedies for these difficulties we have nothing to do in a meeting like the present; but as men who have to earn our bread from the soil, it behoves us to watch the course of events and follow up such channels as may lay open to us, a means for profitably employing our capital and labour. In the present crisis, circumstances seem to have directed the public mind rather in the course embraced by to-day's discussion.—an increased demand for breeding sheep seems to indicate a considerable desire to invest farming capital in

this line, and certainly entering on a more extended sheep husbandry, it is of the utmost importance that a proper selection be made of the class of stock and mode of management best adapted to yield us a profit both individually and as a community.

The sheep has from the earliest times furnished a source of profitable occupation to mankind. Abel was a keeper of sheep, and through succeeding generations, both before and after the deluge, the tending of flocks formed the employment of a large part of the population of the earth. That this business was a source of profit in early times cannot be doubted, but their flocks ranged over extensive plains without an owner, under climates where a plentiful supply of food was at all seasons provided by nature, little manual labour was required, and pasture was easily renewed by a constant change of place. From this mode of life, under a beneficent climate, arose the songs of the poet of the ease and happiness of a pastoral life. An age advancing, amid refinement and luxury—look back with envy on the ease of more simple times when refinement and luxury were unknown. Unknown also was the anxiety and labour entailed by their gratification. But such a mode of management can only be realized in the earlier stages of society, or when population being small, the market for the surplus produce of your flocks is at a considerable distance. Such a style of husbandry is now realized in Australia in a certain degree, it is yet continued in the interior of Spain by these amid a numerous population, it is now only maintained in a somewhat sickly state by vigorous governmental enactments.

We know of no animal so capable of enduring a great variety of climate and situation as the sheep. And this he does not by turning to the elements a stubborn front, but, with the meekness of his tribe, he entirely alters his character and habits under the influence of varied localities. We find him in every diversity of situation from the storms and ice of Cape North to the parched sands of Sahara. The sheep of the mountains of Tartary, covered with a coat of shaggy hair, scarce seems the same animal which produced our fine merino wool, and it would be difficult to trace the blood of our Leicester and Teeswater in the hump-backed Persian, or the fat rumped sheep of the Cape, whose tail alone, we are told, forms a joint large enough for the table. This singular facility of adaptation peculiarly fits the sheep to be the friend of man—a companion under his ever varying circumstances, and forms the ground work on which we have to build our present observations.

It would be well, probably, to consider what class of this animal is adapted to various localities, taking into our estimate both the character of the sheep itself, and the sources of profit likely to arise in certain positions. And by examining the capabilities of our own country, to come to an approximate opinion as to how far it is adapted to a sheep husbandry, and to what class of that animal its resources are most fitted. First, then, let us take those countries which at the present day may be called pastoral—as for example

Australia, some parts of Spain, the finer portions of S. W. Asia, and perhaps some parts of Hungary—such localities may be characterized generally as thinly populated, with a mild winter. Here their flocks roam the year round over extensive pastures; are seldom loused, and never hand fed. The market is considerably distant. The object in such countries is to obtain a fine fleece, which being of higher or even double value per pound as compared with coarser wools will diminish the per centage for carriage and marketing, whilst the small demand for mutton at home, and difficulty of its exportation, makes it a very inferior consideration, the best parts only of the flesh are used, and the rest boiled down or thrown aside. What we call the finer points of the animal are neglected, or rather studiously kept down, as a superfluity of flesh in those parts would only unfit the animal for his position. Travelling frequently in quest of pasture or water, and often exposed to severe drought on arid steppes and under a torrid sun. A large fleshy animal covered with long wool, would here rapidly sink under his own burthens, and disease and death would defy the exertions of the small number of attendants usually afforded in such countries. In such a position, then, a sheep seems required fine and not too heavy in fleece, with considerable length of leg, not too light bone, and so little disposed to obesity that he can carry himself through considerable journeys without perceptible fatigue or exhaustion, as fatigue, exhaustion, or any species of weakness affecting the secretions must be injurious to the texture and growth of the wool.

Advancing into more civilized regions we find certain districts thinly inhabited from the sheer inability of the soil to repay, by its produce, the labours of a more extensive population. Cattle on such lands hardly find sufficient bite and shelter, but here the sheep may often be kept to advantage. In such a position the market is often comparatively near, both for wool and mutton,—the wool need not be so high in quality, to pay for a short transport, while the mutton here becomes an object of consideration. The large heavy sheep cannot be kept on such land, but we require a variety whose bulk can be maintained on a comparatively deficient herbage, whilst his wool requires to be at the same time heavy enough to shelter him from the inclemency of the weather, and light enough not to encumber him in travelling over a considerable range for his food, often over hill and dale, bog and morass, where a heavier carcass and heavy woolled sheep would sink from sheer weight. This was strongly exemplified in many parts of the North of England and South of Scotland, some forty or fifty years ago. At the first introduction of the Leicesters into these localities—they succeeded admirably: the more level lands. Seeing this, many of the farmers of rougher, barer grounds must follow the fashion, and frequently placed the heavy Leicester sheep on land where he must run over many acres to seek his food, often wading mid-leg deep in bog. The result was what might have been expected, ruin to the farmers; and ignorance gave an evil name to a most valuable class of animals. I know it is

maintained that the fine woolled Merino fleece is more impervious to cold than the heavy Teeswater. It may be so to sheer cold, but a certain degree of depth of wool combined with fineness, seems to afford a greater degree of shelter from the cutting blast and driving sleet; otherwise, why in more northern climates, as Saxony, and North Hungary, is it indispensable that the Merino be sheltered in winter, whilst the houseless Cheviot seeks his only shelter on the barest side of the hill top, where he knows himself best secured from the overwhelming snow drift.

Thus is pointed out the peculiar home of the middle wool. Clean limbed, and compactly formed, with a fine transparent ear, and clear forehead—he carries his mutton high, whilst he displays many of the feeding points, making him eagerly sought after by the grazier and turnip feeder; at the same time that his rougher coat is well adapted to resist the inclemencies of the season with which he has often to contend.

Again, proceed we a step to the rich vales among a teeming population, gathered together by the superior productiveness of the soil, easy means of transporting along the flowing rivers, and abundant employment afforded by increasing wealth and luxury; what farmer would not here be emulous to see the heaviest of our heavy Teeswaters lying around his sheltered pastures, where they need hardly to walk around to satisfy their hunger, while the purveyors for a numerous population have all the fattest stock around bought up, even before it is brought into the market. Here the largest amount possible of mutton is required, and the sheep is able to carry it round with him the short distance he needs to go in search of food; and lying half the time, his constant tendency is to become fatter and fatter. A heavy wool is here also an object; the distance of transportation is nothing, and among such a population it is always required, as a country increases in luxury, the consumption of the heavier wools seems to increase in a greater ratio than of the fine ones—more of the former class seems needed for articles of luxury—as carpets, and all the endless variety of stuffs and merinos, whilst the demand for the fine wools, which are mostly used for body clothing, does not increase in the same ratio. This seems fully proved by the long woolled sheep having extended over almost every part of England where the land is adapted for them, and by a rapidly increasing demand for the same class on this continent.

With these premises let us examine the characteristics of our own country as to its adaptation to a sheep husbandry in any shape, then as to the class of sheep most desirable under our present position to be cultivated. We have, generally speaking, a rich soil affording a fine heavy bite abounding naturally in white clover, small enclosures, affording with the patches of wood great shelter, small farms, on each of which a proportion of horned cattle and horses are kept as well as sheep. A severe winter forces us to house and hand-feed most of our stock, in order to enable them to resist its severity with any degree of condition. We have considerable demand for mutton, the smaller carcass being preferable to

keep during our hot summers, and to my ideas more healthy and fully as cheap as pork. We have also at present a ready sale for wool, whilst on the other hand the high rate of the labour market, joined with the incapacity of the hands generally to be found, makes a laborious species of husbandry, if not profitless, most harassing to the farmer. With these characteristics the country can never become a purely pastoral one, but an opportunity is presented of keeping a considerable number of sheep which following the heavier stock, in a continued change of pasture, would consume much of the food which would otherwise go to waste or tend to produce a coarse herbage. A due attention in this respect, joined with occasional top dressing, would keep our new pastures longer in a productive state and produce on old grass a cleaner, thicker and healthier bite. Again a moderate stock of good breeding ewes would, I am satisfied, pay as well as anything to consume a proportion of turnips, which crop is now admitted on all hands to be one of the best fertilizers of a farm as well as one of the preparatives for spring wheat. In the selection of this country as a place of emigration, farmers are doubtless mainly influenced by the low value of land, affording them the means of producing an article at as low a price as the agriculturist who is situated nearer market, and employing cheaper labour. In this position the great advantage would seem to lie in the application of his own labour to as large an extent of land as the farmer can probably manage. To my mind a moderate extension of our present sheep husbandry, seems to offer the most ready means of accomplishing this object. The substitution of clover in a great measure for bare fallow in the preparation of our lands for wheat would much diminish the amount of manual labour as well as spread it over a longer season and keep our barer soils either of sand or unmixed clay in better heart, whilst instead of glutting the market, with the article of wheat in which our disadvantages are at present very great, we should have a certain proportion at least of our produce of a different character, bringing into the market a considerable supply of wool, on which the labour expenses are not so great, and which from its easy carriage seems quite as secure of a market. In this course of husbandry, I should strongly recommend the covering of all stubbles with clover, and the general occupation of lands not immediately required for crop, with rape, rye or some other green food, it will afford much extra fodder, whilst there is no doubt that all green crops, grown and consumed on the land before they go to seed, instead of impoverishing the soil, tend greatly to enrich it, by the large proportion of their food, which, whilst in a leafy or succulent state, they derive from the atmosphere. When the farmer's capital is small and his means of realising cash by sales limited as it now is here, a considerable proportion of sheep on a farm affords a quicker means of turning our money than cattle, which must usually be kept 4 or 5 years before they are marketable, at the same time the sums being in smaller amounts and more divided as to time the cash is easier to collect.

While on this part of the subject, I would

suggest that our attention be turned as soon as possible to the establishment of regular fairs to facilitate the sale of stock. I know the difficulty arising from our present scarcity of ready money, and that might surely in some degree be overcome. Whilst the advantage to the community generally would be incalculable. What an amount of time and labour is at present spent, in finding any article of stock you may require, whilst it is as difficult to find a customer when you have an article for sale. The farmer near the town who can easily obtain labour for raising root crops, has every facility for feeding stock, and who is conveniently situated for selling it to advantage, must also at present raise his young stock, which could be reared at little more than half the price by the farmer in the back countries, whose hay is often worth only 4 or 5 dollars per ton in the yard, whilst on the other hand the back farmer is compelled to fatten off his stock, in a situation when he has often a great difficulty in effecting sales; or when he can effect them, is at the mercy of the jobber who must make all out of him he can.

As to the class of sheep adapted to our country, under present circumstances, the remarks already made point at once to the heavy Leicester or Teeswater, we want a considerable supply of mutton for home consumption, and who knows but Brother Jonathan's taste may soon incline that way too, particularly when he finds there is something better to be had, than his lean scar-mouches called merinos only fit when a dozen years old to walk into the chandler's pot, we want an animal to stand our winter's frost, and I often fancy when I look on some of the aforesaid anatomies what would be their appearance after a night of 30 below zero without their bitters? Why they would be frozen all standing, half the oats in Hamilton would scarce suffice to keep a good sized flock alive, and I opine we should have to teach them how to eat turnips. We want inward heat which can only be kept up by a little fat outside, we want early maturity, and the Leicester or Teeswater is your only sheep to feed off after one winter and two summers, if you add another winter you greatly increase the proportion of labour and cost, while sheep of a variety of ages are hard to be maintained on your contracted pastures. The oldest knows best how to forage for himself, the bell wether is ever the fattest of the flock, again in woods the Teeswater averaging 6-8 lbs. at 7 will produce more than the Merino clipping 3 lbs. at 2s.; the latter I have found, after careful inquiry, to be something like the average of what are called fair flocks in the U. States. The very superior varieties of French Merinos do not seem to have been yet sufficiently tried on this continent, to enable us to express an opinion as to their adaptation to our position. The proportionate value of these may alter, but I should rather incline to think, for the reasons already given, that any change would be in favour of the heavy wools. Countries of a more pastoral character where the mutton is disregarded, can at all times supply the full complement of fine wools, whilst we shall have to fight zero and the winter nights with thick carpets and tallow candles, and who knows but when a change

in our present monetary system has altered our already extensive real property into available capital for the employment of our native industry, who knows I say but this very sheep husbandry may in the home manufacture of woollen, open up a source of employment to a new food-raising population, which may be the chief consumers of our own produce, we may then perhaps be proud of teaching the land of freedom the way to use free trade, for we should be in a very different position had we only a small proportion of our breadstuffs to offer for sale, to a neighbour who required them, instead of begging a market for our present large surplus. We should then be prepared to force that reciprocity now so eagerly desired, as were we not driven into the market by our own necessities, the purchaser would have himself to pay any amount of duty he might be fool enough to impose.

My view then of the present subject is that a considerable extension of the culture of sheep in our present mixed husbandry, might be with advantage effected, partly as diminishing the excessive supply of wheat in the market, partly as enabling us to raise that wheat at a lower cost, by the cheaper mode of preparing the land with clover and root crops as substituted for bare fallows. As affording a class of investment in which our farming capital will be more moveable, affording an opportunity of carrying on along with our present principle of small profits, that of quick returns, at the same time that it will be bringing our stocks gradually into a preparedness for the only state of things which I think at all compatible with our future prosperity, an increase in our home manufactures, an advance in which must cause a proportionate advance in the home demand both for wool and mutton. A moderate increase of this husbandry affords the means of taking advantage of our position in employing a larger extent of land with less of the at present costly article of labour, while a less proportion of the labour will be of that severe and hurried character so trying to every farmer in Canada.

My view of the class of sheep best fitted for our purpose having been already pretty decidedly expressed, and this paper having served itself somewhat beyond the usual bounds, I will leave for another meeting that part of the matter which takes directly hold of the management of our sheep stock, and I hope some more experienced shepherd among us, will see it his duty not to let the subject drop, but endeavour to enlighten us on a point on which I am sorry to find there is generally too little known among Canadian Farmers.

Mr. Wright was of opinion that the Leicester, or a cross between the Leicester and the Teeswater, was the best breed of sheep for us at present, judging from his own experience; but from what he had read he thought the Southdown a very valuable breed of sheep; he did not approve of short woolled sheep, although they were in favour with the manufacturer, yet he thought two pounds of Merino wool was not equal to six pounds of Leicester wool; thought that Burs and other weeds were seriously injurious to the wool,

and hurt the sale of it; that there was a good demand for mutton in this neighbourhood, and that our little market would compare favourably with much larger towns; had been in Rochester, Kingston, &c., and our own market showed finer mutton than any of them, which said a great deal for the farmers in this neighbourhood; from his stock of ten breeding ewes, he had cleared in lambs and wool, £22 16s., which was 200 per cent., and which was a very good return; had sold some ram lambs at a good price, which made the return larger, but thought that in an ordinary way, allowing a lamb and a half to each ewe, and a fair price for wool, they would double themselves each year.

Mr. Page said he knew very well that his friend, Mr. Hume, would not be content to wash and dip, and feed and shear, but that he would do his work thoroughly; and dye, and spin, and wear, and dress, and press, and finish it completely; he thought the sheep one of the most useful animals the Almighty had committed to our race; that it supplied his wants of food, and raiment; the first want of man was food, which it supplied of an excellent kind—their raiment as clothing, nothing can be more comfortable than flannel, and all the different cloths made of wool—and thought it did not directly supply fuel, yet, as we must often substitute light for heat, it might be said to supply that also—then the skin when tanned furnished material for the shoemaker, the bookbinder, &c.

Mr. Bourn was endeavouring to have a cross between the Leicester and the Southdown; he found their mutton more approved of than the pure Leicester—the lambs would weigh when three or four months old, about 50lbs.; found the wool of this cross finer than the Leicester; thought it was not much approved of at the Factory.

Mr. G. Underwood had long been accustomed with a breed of sheep which he had hardly heard mentioned here—the Cheviots—he thought they would make an excellent breed for this country, as they were both hardy and fine woolled. In the South of Scotland, where he came from, a cross between the Cheviot and the Leicester was considered the very best feeders—they put Leicester rams to Cheviot ewes, and had known the lambs sell for, from 20s. to 22s. a head.

Mr. Hume had thought a good deal about the Cheviots, as he believed that he came from a farm where they kept the finest blooded Cheviots in England; had found a cross between the Cheviot and Leicester very profitable; but thought that on our fine pastures we might as well keep larger sheep. Should fine wool continue in favour, it might be worth while to try the Cheviots.

Mr. Radcliffe was glad he had come, as he had heard some very valuable information, thought the Cheviots were not so much domesticated as the Leicester, were wilder and more restless, and would be often to break over fence than the quieter Leicester. When he was in Scotland, they divided their sheep into three lots, and their old ewes sold for 35s. a head. Said the Butcher gave us too little for our lambs, thought it was better to keep them till they were a year old, found the burrs a very great nuisance.

Mr. Mason had rather gone out of sheep breeding lately, thought he never saw a finer climate than ours for sheep, we had not so many cold rains as they had in Britain, never saw his sheep suffer much from the cold, though they did from the heat; he certainly had a fancy for the Leicesters or rather a cross between them and the Teeswater, he found the burrs very troublesome, he had what he would call some pretty good Leicesters sheep. Last year he sold four sheep and a lamb, got £15 for them, thought that would pay as well as wheat, thought the Butcher did not give us a fair price for our lambs.

Mr. Wade said the question was what breed of sheep would yield us the most money. In England, wherever they have rich fertile land, they keep the Leicester, the Teeswater, the Cottswold, and other heavy sheep, and on high land the Cheviots and other lighter sheep, adapting the sheep to the land; his experience was rather against Bakewell Leicesters—he found they were apt to lose their wool in spring and thought them not hardy enough for us. And though they had on fat very fast in summer, they were apt to lose it in winter and come out bare in spring, he believed that his father was the first to introduce the English breed of sheep to this neighbourhood, he got some Teeswater and Leicester ewes, and he always found it was very difficult to bring the Leicester ewe through winter and save the lamb. He thought it was worth our while to turn our attention a little more to sheep husbandry than we used to do now that wheat was so low. He found that there was quite an inquiry for our sheep on the other side of the Lake. He once had a notion, as fine wool was so much in demand, of trying some Merinoes, but since he saw so much inquiry for Teeswaters, he thought he would keep to the stock he had, thought that though the Cheviot was a very valuable breed, yet as our land was generally fertile, we might as well keep a large sheep.

A vote of thanks was given to Mr. Hume for his excellent essay, who agreed to the request to read another paper in continuation of the same subject before the Club at its meeting in January.

WALTER RIDDELL, Secretary.

EXPENSE OF KEEPING SHEEP.—The *Maine Farmer* restricts the annual expense of keeping a sheep in that State at one dollar; while others make it considerably more. An estimate in the New York State Agricultural Transactions make the amount nearly two dollars. Of course these calculations are all subject to many modifications, such as the varying price of fodder, &c., as influenced by seasons and locality. Some farmers in the Eastern States estimate the cost of growing wool at a quarter of a dollar per lb., and think that at a less price the business of sheep farming is unprofitable. We could like to have the opinions of Canadian farmers on these matters. Wool-growing is evidently an improving business at present; and there can be no doubt among practical men that proper shelter and a liberal supply of nutritious food, whether to sheep or cattle, is the most profitable course a

farmer can pursue, always premising that his animals are of the right kind.

DURHAM CATTLE: A CHALLENGE.

SIR:—I beg leave to submit, through your Journal, the following proposal for a sweepstakes, to be decided at the General Meeting of the Agricultural Association, which holds at Toronto in September, 1852; and I beg leave, also, to state that in confining the subscription to Durham Cattle, I have no design to depreciate Devons, Ayrshire, or any other breed, which are all valuable animals in their way, and may, perhaps, some day, extinguish the Durhams.

At present, *Improved Short Horns* stand high; I, for one, feel no doubt of their maintaining their distinguished position; always providing that due skill and attention shall be paid by Breeders.

I hold it to be quite indispensable, that animals intended to compete should possess *pedigrees*, either included or connected distinctly with the British or American Herd Books:

CONDITIONS OF COMPETITION FOR THE BEST PAIR OF YEARLING HEIFERS.

- 1st. The subscription to be not less than £2 10s. each subscriber, nor to exceed £12 10s.: and to be paid in the hands of the Secretary of the Association, before competition. If subscribers fail to produce Stock, the forfeit shall be half the subscription.
- 2nd. Each subscriber may exhibit any number of pairs, provided they are put together in pairs, before competition; and no extra sum is required, beyond the one subscription.
- 3rd. Correct Pedigrees of both Sire and Dam, traced to the British or American Herd Books, shall be produced, and the Judges shall have power to reject any which are not, in their opinion, satisfactory.
- 4th. The Board of Directors of the Provincial Association shall be requested to select and secure the services of Three competent and unbiassed Judges.
- 5th. The Heifers must not be out of their *second* year at the time of competition, or in other words, they must be Calves of 1850, and born and bred in Canada.
- 6th. Intending subscribers will communicate with the Secretary, prior to the 1st of May, 1852, at which date the subscription Book will be closed and details arranged.

Yours truly

ADAM FERGUSSON.

To Geo. Buckland, Esq., Secretary, &c.
Woodhill, Dec. 29, 1851.

DEATH OF S. W. COLE, Esq.—We learn from a recent number of the *New England Farmer*, that the late Editor of that well conducted journal is now no more. Mr. Cole has for many years been favorably known to the American public, not only from his connexion with the "Farmer," but also for his "American Fruit Book," and a

useful treatise on the "Diseases of Domestic Animals;" books that have passed through several editions. We quote from his memoir the following beautiful paragraph, indicative of the hallowing influences of rural taste and pursuits, when accompanied by a useful and virtuous life:

"After a long and painful sickness, the subject of our remarks died in the full possession of his reason, and of well defined hopes of a happy immortality—Glorious anticipations of Heaven cheered the prospect of his passage through the dark river, and no clouds of despondency or murmurs of discontent disturbed the calm serenity of his departing moments. So gently did life ebb away, that

"We thought him dying when he slept,
And sleeping when he died."

Our friend was a steady and earnest laborer in the field where his lot was cast. The natural, was ever to him the beautiful. He shrunk from the busy walks of life, and found satisfaction and subject for deep contemplation in the open field, the garden, or the umbrage of the dim forest. This ruling passion was found strong in death. "Lay me," said he, when the feeble flame was but *glimmering* in its socket, "lay me in some quiet *look*, under some shrub or tree, and I shall repose in peace." With pious care, the living have regarded this pleasant wish. Under the interlacing branches of trees which were almost spiritual with him, gentle hands have laid the worn body most gently down. Verses which once came in *angel-tones* to his ear, will still a tune their plaintive notes above his head, and mingle with his free spirit, in the shades he loved so well."

PREVENTION OF CRIB-BITING.—This injurious habit in horses, hitherto regarded almost as incurable, appears now to have received an efficient check in a very simple and inexpensive arrangement by Sir Peter Lawrie. Most of our readers are aware that crib-biting is a practice so injurious to a horse as to constitute legal "unsoundness." The animal seizes violently the manger or some other fixture with his teeth, arching his neck, and sucking in a quantity of air with a peculiar noise. This habit is most frequent in young horses, or such as are highly fed or underworked, and curious enough, appears to be contagious, as one confirmed crib-biter will inculcate others with the practice if allowed to associate. Muzzles, neck-straps and several ingenious contrivances have been used, with but little success. Sir Peter's remedy simply consists in preventing the animal from seizing the manger or any other object while tied up in the stable, by boarding over the space between the bottom of the hay-rack and the outer edge of the manger, forming a steep inclined plain. Portions of the boards can be partially removed to enable the horse to eat at stated times. This simple precaution is said by the most eminent authorities to be perfectly effectual in the prevention or cure of crib-biting.

☞ "Scientific farming" is the ascertaining of what substances the plants you wish to raise are made, which of these substances are wanting in your land, and what manures will supply them.

SOLIDIFIED MILK.—A few cakes of the newly invented solidified milk have found their way to this country. The article resembles, in color, consistency,

weight and feel, cakes of pale yellow soap. One lb. grated into boiling water, will make several gallons of good milk. It is warranted to keep any number of years. Price, in England, one dollar per pound. A friend, however, whom curiosity led to import a small quantity, has tried it and assures us that it is all that it claims to be—"a real blessing to mothers" and mariners.—*Home Journal.*

HORTICULTURE.

[Gardening being intimately related to farming—both being in fact dependent on common principles—we shall continue to devote a brief space of our journal, as circumstances will allow, to the elucidation of this most interesting and useful art. It is now quite time that more attention should be paid in all the older settled districts of this country to the principles and practice of Horticulture, which is an art most admirably adapted to improve rural taste and promote domestic enjoyment. A well kept garden, accompanied by a little ornamental planting and a well laid out orchard, gives an air of neatness and comfort to a human dwelling place, and adds to the picturesque appearance of a country, in a degree which it is difficult to over estimate. We hope to be favored before the opening of spring commence with some practical directions for managing a Kitchen Garden, and the common sorts of fruits and flowers, adapted to the climate of this country, by correspondents well acquainted with their subjects. In the meanwhile we commence a series of papers on the science and principles of gardening, copied and condensed, in a great measure, from a little English publication of very great merit, from the able pen of Mr. Kemp, entitled, "The Hand Book of Gardening," tenth edition: and we ask the attention of our *agricultural* readers to the principles that will be communicated.]

THE SCIENCE AND PRINCIPLES OF GARDENING.

NO. 1.

Gardening, like Farming, may be treated either as an art or a science; and, as in case of most of the useful arts, the former has hitherto been much in advance of the latter.

The art of Gardening consists in the employment of all those means necessary to rear, develop, nurture, and gather in the various crops, whether of herbs, fruits, or flowers.

The Science of Gardening is founded on a knowledge of the nature, constitution, habits, and wants of plants, and on the way in which the agents and processes of Nature affect them. It should, therefore, teach the general applications of the facts thus known to all the operations of culture.

An individual who has no acquaintance with the Science of Gardening, conducts its numerous processes very much in the dark, and is successful or otherwise, chiefly as accident may determine. He sows, plants, and labours, as his forefathers have done before him; and the simplest derangement of the circumstances which have previously caused him success will disappoint and frustrate all his expectations.

The mere book-gardener, on the other hand, who is conversant only with theories, finds himself continually still more at a loss, and liable to perpetual failure; for the commonest results of every-day experience being unknown and neglected by him, nothing that he attempts can prosper. Hence, the teachings of science, and the precepts of experience, are alike necessary to enable any one to garden satisfactorily, and to correct his practice according to the varying conditions of soil, climate and numberless modifying circumstances.

THE ORGANS AND PARTS OF PLANTS.

These are necessary to be understood in order to cultivate and propagate plants successfully. As with the animal system, every vegetable is furnished with certain parts or organs which are essential to its health, its preservation, or its very existence. An organ is a part of a plant which occupies a certain position and fulfills certain offices in its economy, and to which a particular and distinguishing name is applied. Stems, leaves, roots, flowers, are such organs; and some of the subordinate parts by which special and peculiar offices are performed. The spongelets or tips of the roots—the pores situated on most portions of the external surface—the sap, which is like the blood of the plant—and the albumen, which is the incipient layer deposited yearly beneath the bark of woody plants, to increase their bulk—are examples of such parts.

I.—LEAVES.

These, as is well known, are the upper appendages of plants, which give them nearly all their beauty, and are the means by which they expand and become strong. They are the instruments of elaborating all food, and give off its watery parts. It is in them that the processes analogous to digestion and assimilation in animals are carried on. Through the action upon them, they separate the nutritious from the watery portions of the sap, and discharge the latter into the air, while they restore the former into the branches and stems. When therefore, by birds, or insects, or disease, or the browsing of cattle, a plant is stripped of its leaves, it will either become weak and sickly or altogether die. And the more abundant and healthy the foliage of a plant may be, the more vigorous and luxuriant will be its general growth. To pluck leaves from plants with the view of aiding fruit or wood to ripen, or at all to anticipate their falling off in the Autumn, is a great error; for it is through the leaves alone that both wood and fruit are enabled to reach maturity.

It must not be supposed, however, that encouragement should be offered to the growth of leaves in all cases. A fruit tree or a flowering plant may sometimes settle into a thoroughly unprolific state in consequence of undue luxuriance in leaves and wood. The correction will then be found, not in reducing the number of leaves by thinning them, but by pruning the branches, or descending to the source of the evil, and impoverishing or pruning the roots. This is merely mentioned to show that although leaves are most necessary, and their action beneficial, they may in particu-

lar instances, become too numerous, and thus do mischief. There is a kind of balance preserved by Nature in plants, between the leaves and the roots; so that where the one is particularly strong or feeble, the others will be sympathetically strong or feeble also. Whatever tends to increase diminish the one will therefore similarly affect the others. Roots may be very vigorous, and require pruning, as already suggested, because they occasion the production of too much wood and foliage. And because, from removal or other causes, roots may sometimes be curtailed or mutilated, the branches should in such cases be slightly pruned, to restore the balance between roots and leaves.

SCIENTIFIC.

RUTTAN'S PATENT VENTILATING STOVE.

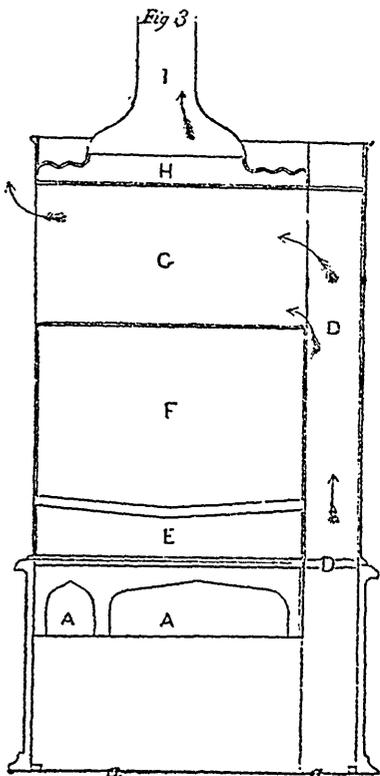
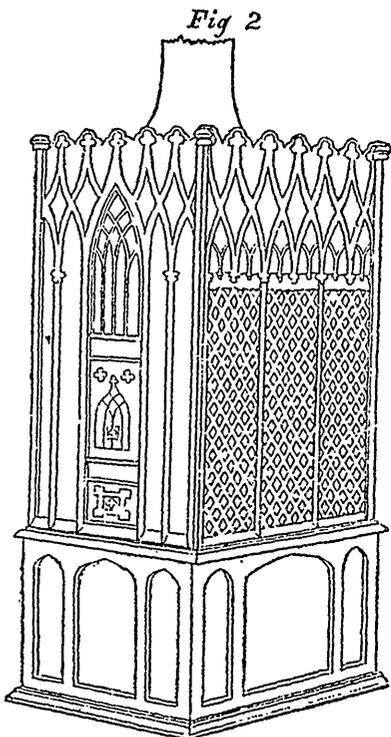
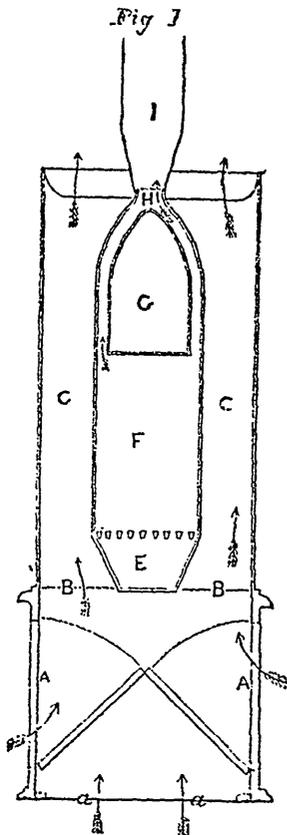
The subject of warming and ventilating houses, churches, schools, &c., is indisputably one of vital importance to the health and comfort of mankind; and he who brings into practical operation a cheap and efficient system of accomplishing these two objects, cannot be otherwise regarded than as a benefactor of his race. The advantages of thorough ventilation in all buildings in which human beings live or congregate, and of other sanitary regulations so peculiarly needful in crowded cities, are now happily being discussed with an earnestness and practical application, that cannot fail to promote in a high degree, the comfort and longevity of man. In a climate like that of a large portion of North America, the value of a system for securing warmth and ventilation, in an economical manner, can scarcely be overestimated. Our winters are long, and always more or less severe; firewood is every day becoming scarcer, and consequently dearer, as population increases; the wasteful system of burning fuel in large open fire places, involves an expense in thickly settled districts which can no longer be borne; and much domestic discomfort, and no small amount of enfeebled health are the inevitable results of our often ill-contrived and badly constructed dwellings. Till recently, very little attention has been bestowed on this subject by persons the best qualified to effect a reformation; and in this country we fear that the great mass of the people are ignorant of, and consequently indifferent about, the matter.

Mr. Ruttan, who is known to have devoted much attention to this subject, has favored us with a set of wood-cuts illustrative of his ventilating stove, which is now a patented article, both in Canada and the United States. We have personally no knowledge of its practical operation, but we observe several American papers speak well of it, and we have heard the same from individuals in this country. Our readers will be able to form an idea for themselves, after inspecting the accompanying illustrations.*

* The few inaccuracies in a portion of Mr. Ruttan's former communication to us on ventilation, pointed out by our gaseous correspondent on a subsequent page, by no means diminish the importance of the

Fig. 1 is a vertical cross section. Fig 2 is a prospective view. Fig. 3 is a vertical-longitudinal section Fig. 4 is a horizontal section. Fig. 5 is a wooden or non pedestal. Fig. 6 is a bottom plate. Figures 7 and 8 show the manner in which the ventilating air is drawn under the floors.

with ventilation : any process by which the ventilating air may be warmed, not heated, will be



A A are apertures to admit air from rooms. a a are apertures to admit air from outside. B B are apertures in the bottom plate. C C are apertures on each side of the stove. D are apertures to admit cold air from outside for oven. E is an ash pit. F is a fire chamber. G is an oven. H is a fire flue round the oven. I is a smoke pipe. K is the skirting or base. L are foul air apertures in skirting. M the floor of room. N are joists. O a space between joists. P are two inch slats, or firing nailed across joists, to lath to. Q lath and plastering. R a space between plastering and bottom of joists, for circulation of air across the joists.

The *Scientific American* in a recent favorable notice of Mr. Ruttan's patent, observes :

"This machine is not necessarily connected

subject; nor affect, as we can see in the least, the efficiency of Mr. Ruttan's apparatus. We will cheerfully give "Mr. Carbonic Acid" and the inventor a reasonable portion of our space—if they should require it—for an amicable discussion of a subject so pregnant with importance to all that breathe.—*Editor.*

just as effectual, but Mr. Ruttan has invented this stove for supplying a deficiency—the hot-air machines in use being too cumbersome and expensive for small dwellings, school houses, offices, even if the air proceeding from their hot-air chambers

was not injured by heat. Mr. Ruttan's principle, with regard to the ventilating air appears to be quantity of air not heat. He barely warms the air, and makes up by quantity of air what has hitherto been accomplished by quantity of heat;

Fig 4

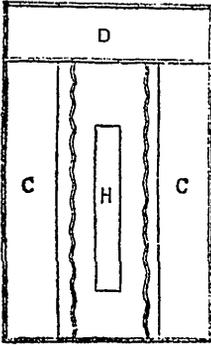
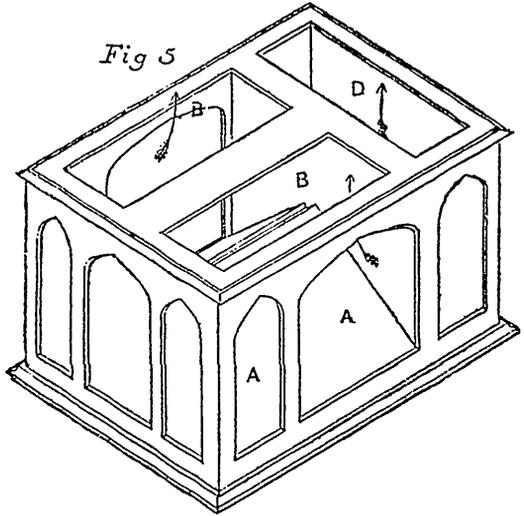


Fig 5



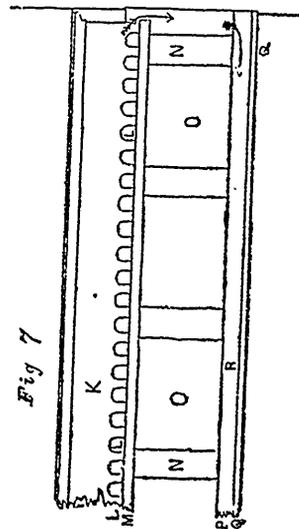
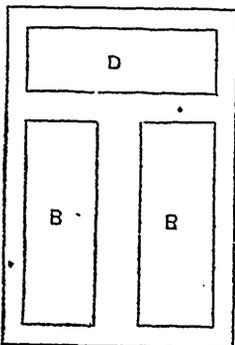
and in order to cause this extra quantity of air to flow through the house (for this, upon his plan, appears to be the desideratum,) he very much enlarges the chimney flues, and increases the number, so as to exhaust the building to the extent required.

Now, if it be a fact, what Mr. Ruttan asserts, that air will flow through a building so constructed, as to take in the atmosphere at a lower point than that at which it is taken out, under all circumstances and with a rapidity in a ratio equal to the difference between these two points, then we think he has accomplished what he professes to have done, and the importance of this principle to the ventilation of dwellings is beyond dispute.

Mr. Ruttan's is the downward principle of ventilation, and he says the building may be filled

settles and falls down under the floor, and is thence carried out through the chimnies or "foul air shafts," as he calls them. The *modus operandi* of constructing the first floor of the house, will be comprehended by a view of figs, 7 and 8 where it will be observed the foul air is drawn under the floor, to the boards of which it imparts the residue of the warmth, and then passes out

Fig 6



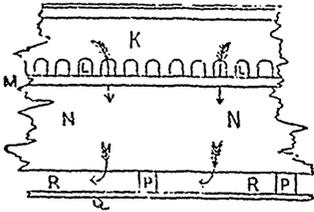
between the joists and the ceiling of the cellar or basement, into and up the flues.

We will not commit ourselves by expressing an opinion upon the practical operation, but we do think there ought to be sufficient enterprize and public spirit in some of our architects to give the system a trial; if found to work, and our archi-

with warmed air, which, after it has done its work in warming and carrying off the miasm, all

jects could, with confidence, assure proprietors of new houses that their dwellings would be thoroughly ventilated and warmed when completed, and save them the trouble, vexation, and annoyance of a second operation to make them habitable; they might depend upon an ample reward in the business it would bring them. Mr. Rattan has given this subject long and serious attention, and by study and experiment upon experiment, the result is here presented to our readers. It is now the subject of a patent for the United States

Fig 8



—having cost the inventor \$500 for the simple fee, showing no small amount of confidence in its merits.

This ventilating stove is intended to be put in the hall of any house already built, for the purpose of supplying it with ventilating and warmed air, but it will be most effectual the greater the number of fire places that are contained in the smallest house. Where there is flue room to the extent of four feet it will throw 500 cubic feet of air per minute through the house, which is enough for 50 persons, allowing 10 cubic feet to each."

As we have now in Canada a number of architects of scientific skill and ability, it is most desirable that they should give to the patent ventilating stove the principles which have been but imperfectly described above, a full and fair consideration. And we earnestly urge the same on all our readers who intend to build. A dwelling constructed upon scientific principles evolved by science and experience, is commonly in the first place, a saving of expense, and promotes health and domestic comfort to a degree that can only be understood by their actual realization. Mr. Rattan, as a native of Canada, must from what we know of his inquiring and observant habits of mind, be intimately acquainted with the peculiarities of our climate, and the domestic state and wants of the people; and, who would, we are sure, give any information in his power on this subject to parties interested, by addressing him at Cobourg.

THE ICE CROP AND ICE HOUSES.

The ice crop is getting to be one of great importance, and the early commencement of winter furnishes the prospect that the harvest of this crop may be abundant very soon. It used to be thought that ice in summer was a luxury which the rich only could enjoy, as they alone were able to build costly houses to keep it in.

Experience, however, has proved this a fallacy, and that the poorest man can have a full supply of this cooling article in the heat of haying, as well as the rich man.

The crop itself, in this latitude, forms as clear and as crystal for the poor man as for the rich—it being no respecter of persons—and offers itself as a common harvest to every man who pleases to gather it.

Again, it requires no very costly expensive or elegant house to keep it in. A room in a shed or a cellar, or in a barn or in a rude building on the ground, covered with rough boards, with a lining five or six inches filled with sawdust, tan, or turning shavings, make the best magazines for the preservation of this article. These will cost but a little, and will, when filled, afford good ice during the warm season.—*Maine Farmer.*

CARBONIC ACID IN HIS OWN DEFENCE.

For the Canadian Agriculturist.

Mr. Editor,—As this is the first time that I have ever had the honour of addressing you, and as it is of course desirable that you should be made acquainted with the name of your correspondent, before consenting, as I hope you will, to insert the following vindication of his character in your most valuable journal, I take the liberty of hereby introducing myself:

Mr. Carbonic Acid, C.O.O.,

Grotto del Cane,

Naples.

My reputation, Mr. Editor, in the eyes of yourself and most other well-informed Agriculturists, is, I may venture to say, by no means a bad one, being justly regarded as of very great value in promoting the health and growth of all plants and vegetables whatsoever, in which important duty I am always materially assisted by my esteemed relatives—Ammonia, Lime, Phosphorus, and others.

High as I may stand in the estimation of Agriculturists, however, it does appear that I am not equally favoured by one of your talented correspondents, who, to judge from his late communication on Ventilation, must consider me as a malignant demon or evil spirit, constantly striving to insinuate myself into places where I have no business, tumbling in through windows, hiding myself in corners and other lurking places, and whose presence, or even approach, is to be considered as the precursor of disease and death.

My innate love of truth, compels me candidly to confess that *too much* of me is not beneficial either to man or beast; and that, when I become strong, I am decidedly poisonous; but when we consider the immense quantities of me that are swallowed in the form of champagne at night, and medicinally as soda water in the morning, as well as the large amount disposed of by the advocates of temperance in the shape of ginger beer, I do not believe either that my poisonous properties can be so very extraordinary, or that I can possibly be so tremendous a bug-bear as

would appear from the article on Ventilation, contained in your last number.

In order to remove from the minds of your readers so unfavourable an impression, I shall now proceed to correct a few of your correspondent's errors with regard to my properties and places of residence, and should you, Mr. Editor, be in any doubt as to the correctness of my statements with respect to these points (on which you must allow I ought to be pretty well informed), I would beg to refer you to any respectable work on Chemistry, for confirmation of my assertions. In so doing, I will speak of myself in the third person, for the sake of convenience.

The paragraph in Mr. Ruttan's communication, to which I would more particularly direct attention, is as follows:—"A few, fancying themselves a good deal wiser than their neighbours, do bring a few square inches of the external air, taken from the surface of the ground, to their hot-air stove. This practice is little better than the other, for here they get pure carbonic acid—especially at night and during calm weather. Providence has ordered that this portion of the atmosphere should be heavier than any of the others, in order that vegetation may have the full benefit of that which is its very life; and the fact is notorious with scientific men, that so near the density of water does this become that it can, at times, be poured out of a tumbler. And this is the material with which many respectable and intelligent men fill their dwellings!!! So that, besides this miasma engendered in your cellars, generated by the decomposition of all these edibles, they are the receptacles of constant streams of carbonic acid pouring in at the windows."

1. The statement of carbonic acid being nearly as dense or heavy as water, seems to be a rather powerful exaggeration, as the following numbers will show. 100 cubic inches of carbonic acid weigh 47.3 grains; say, in round numbers, 48 grains; 100 cubic inches of water weigh 25,250 grains: water is, therefore, five hundred and twenty-five times heavier than carbonic acid. If Mr. Ruttan's statement were correct, it would be well to inquire whether the persons who had filled their houses in this manner, were in the custom of entering their rooms on stilts, or whether they provided themselves with swimming jackets, as they must have done if their houses were filled with a substance nearly as heavy as water.

2. "On the surface of the ground, we have pure carbonic acid, especially at night, and during calm weather." The following numbers will show the incorrectness of this statement. 10,000 parts of air contain as a maximum $6\frac{2}{100}$, as a minimum $3\frac{1}{10}$, and in general about $4\frac{15}{100}$ of

carbonic acid. This quantity is increased at night by about $\frac{31}{100}$ ths. The quantity is increased during stormy weather (not diminished) by about $\frac{22}{100}$ owing to there being a slightly larger quantity of carbonic acid in the upper regions of the atmosphere, and about high mountains, which is brought down by the winds. This increase of carbonic acid is, however, exceedingly small and scarcely perceptible.

So far, then, from the air at the surface of the ground being pure carbonic acid, it only contains five tenthousandths, or seven at the most; the incorrectness of the statement is self-evident, for, if it were true, how could all the rats, mice, moles, and other smaller animals contrive to exist? Air which contains only nine per cent. of carbonic acid, causes suffocation, for both the inspired and the expired air contain about equal quantities.

3. But a still more serious error runs through the whole of Mr. Ruttan's statements with regard to the manner in which carbonic acid accumulates and remains on the surface of the earth, in wells, mines, caverns, and between the joists of buildings.

"Providence has ordered that this portion of the atmosphere should be heavier than either of the others, in order that vegetation may have the full benefit of that which is its very life." Are we to understand from this that the carbonic acid being heavier sinks down through the air and collects on the earth? The sentence will scarcely bear any other interpretation; but it is certain that if Providence had been pleased to arrange matters in this manner, the present discussion would never have occurred, inasmuch as there would have been a stratum of carbonic acid over the earth's surface sufficient to suffocate the whole of us. Fortunately for us, there is a provision of Providence, an all-wise, an all-admirable one, which totally prevents any such accumulation.

Mr. Ruttan seems never to have heard of the *Law of the Diffusion of Gases*, a law of the very greatest importance in the economy of Nature, which may be briefly expressed as follows: "Two or more gases, however different, when brought into contact rapidly mingle together until a perfectly uniform mixture is produced." The diffusibility of the gas overcomes the force of gravity; the lighter descends, the heavier ascends, until complete uniformity is obtained. Mr. Ruttan's arguments seem based on the supposition that no such law exists. The diffusing or mixing takes place through the smallest apertures. Let Mr. Ruttan fill a bottle with carbonic acid, or any other gas, deleterious or otherwise, and close it all but one pin-hole; or let there be attached to the mouth of the bottle a twisted narrow tube fifty feet long:—in

the course of a few days, or even hours, the air in the bottle will be found to be just as pure and exactly the same as the rest of the air of the apartment in which the experiment is made.

How is it that many localities, lying in sheltered positions, surrounded by mountains, and in which thousands and tens of thousands of pounds of carbonic acid are being annually given out from the earth, for instance, at Carlsbad and the Rhine Provinces; how happens it that these places are perfectly healthy; how comes it that the gigantic breweries of London are not perfect charnel houses from the enormous volumes of carbonic acid exhaled from the fermenting vats? simply because there is such a law as the diffusion of gases.

But it will be said that carbonic acid in injurious quantity is often found in wells, caverns, sewers, &c., &c. The fact is perfectly true, but the reason of the gas being always found there is, that it is being constantly exhaled from the bottom, either from the water of the wells or from a decomposition of the filth of the sewers. Stop up the sources from which the gas is being continually exhaled and diffused through the atmosphere, and the Grotto del Cane, or the Valley of Death, would in a very short period of time become as healthy as Yonge Street.

Mr. Ruttan states that the deleterious gas accumulates to such an extent between the joists and floorings as to extinguish a candle, and yet in a previous paragraph he maintains that it passes with the greatest ease through floors and ceilings; the one statement is in contradiction to the other.

It is scarcely necessary to state that the assumption of cholera, consumption, serofula and elephantiasis being caused by exposure to carbonic acid alone, is as unfounded in fact as are many of the statements to which I have alluded.

Thus far, Mr. Editor, I have pointed out a few of the errors into which your correspondent has inadvertently fallen; my present object has been solely to remove any erroneous impressions which might exist in the minds of some persons as to the danger they were incurring from carbonic acid, at the same time to assist in a small degree in that most important object of periodical literature,—the promulgation of correct knowledge.

I should be extremely sorry if it should be thought that I desired in the slightest degree to invalidate the efforts of your talented correspondent towards effecting a reform as regards ventilation, which is a subject of the greatest interest affecting as it does the health and lives of so many millions of our fellow creatures, and sufficient praise cannot be given to Mr. Ruttan for the zeal and energy with which he has devoted himself to so important a study.

In conclusion let me offer my readers a piece of advice:—Kick out your stoves, unless perhaps in the hall, where from the more constant draughts they can do little or no injury; use open fire-places or coal grates, and if you wish to make assurance doubly sure, fix an American ventilator into the flue just below the ceiling; stuff up your windows if you will, but not your doors; allow a free current of air into the room, either by Mr. Ruttan's process, or by the natural one, and having done this you may safely rely on it that you have nothing to fear from,

Mr. Editor,

Your most obedient Servant.

CARBONIC ACID.

December, 1851.

THE GEOLOGICAL SURVEY.

For the Canadian Agriculturist.

SIR:—With the view of furthering the objects contemplated by the Geological Survey, connected with Agriculture, I communicated a few facts and practical observations in the *Globe* of March 11th last, with reference to the *Gypsum* and *Coal Formations*; especially referring to the former as immediately connected with the prosperity of Canadian Farming, and to the latter as exhibiting similarities in mining characters, Dip, Position, &c., with some of the great mineral masses in Europe and elsewhere. It was expected that the observations and suggestions alluded to, respectfully made and brought under notice, would have drawn the attention of persons officially employed; but as this usage has not been complied with, I take the liberty of offering a few further remarks on the same subject, and pointing out some important defects in the published proceedings. In the Reports, 1844, we have a brief and imperfect examination of the important Gypsum Formation on the Grand River; on the development of these and similar mines of the mineral depend results far more weighty to Canada, than the Copper regions of Lake Superior. Since the Reports alluded to, four or five mines have been explored, not one of which was indicated in the Report, but several of them were subsequently pointed out by practical men, by their relative Geological position to old workings, and other mining characters. Another important omission is the absence of any notice of the peculiar cretaceous nature and Chemical combination,—a Carbonate as well as Sulphate of Lime, of extraordinary Specific gravity.* The interesting and valua-

* This fact was explained in a former communication, when preparing a quantity of Gypsum sent from Paris in C.V., to the Royal Agricultural Society, the Carbonic Acid Gas liberated in grinding put out the candles in the mill.

ble fact of the peculiar fertilizing agency of this Gypsum (especially to be found in some mines near Paris.) will be better understood by those who have examined the effect of Irrigation from water impregnated with Carbonic Acid Gas, derived from the Calcareous Strata or Cretaceous Rocks in which the Springs originated; a fact noticed by a writer whom Sir Charles Lyell styles the Father of British Geology; Mr. William Smith, the author of the first Geological map of England. (See his Treatise on water Meadows, written when constructing those of the Duke of Bedford, at Woburn, which are particularly described.) The dark slate color of the best Gypsum is also derived from the Carbon, this is evident in preparing the two varieties for cement or moulding; while the white pure Gypsum parts with the water of crystallization only, the dark slate color gives out a volume of smoke with strong smell of Carbonic Acid Gas; and both specimens become equally pure white by the process, and about equal in Specific Gravity.

Another general defect in the Reports is the absence of any glossary, the numerous scientific terms constantly recurring which are not to be found in any of the ordinary Dictionaries, must render the information intended to be conveyed entirely unintelligible to the great majority of readers, but few of whom have the means of referring to Lyell's or other standard works in which glossaries are to be found.

It was also expected to find occasional notices of rich veins of marl or soft Cretaceous sand,—substances of great value to the Agriculturist in particular sections, but the only notice to encourage us Farmers is, “that Gypsum *will be found* between the Saugeen and the present workings on the Grand River,” a distance not far short of one hundred miles! It was recommended that the Geological Survey should supply materials for a Geological Map, as in England, but I do not find any allusion in the Reports indicative of that object, which is much to be regretted.

I have now to state a few remarks on the expected development of Coal in Western Canada, to which allusion was made in a former communication. It was my intention to have made a personal inspection of the Ohio and Michigan Coal fields last Summer, but a poor state of health alone prevented; it is, however, intended in the ensuing Spring, and I confidently expect to find Geological Criteria, in associated mineral masses, mining characters and other facts hereafter to be explained, to warrant the conclusion that both belong to the same formation, and also supply indications for research in the intermediate space in Canada.

I have only to add a suggestion for developing our mineral resources with much more practical benefit and public satisfaction, than can be de-

rived from the present Survey; which is too much calculated to mystify a useful science. Let suitable medals or honors be offered for the best Essays on various subjects on which information is desired; this would lead many intelligent minds to enquiry, and the speedy acquisition of all the facts and local knowledge acquired by our neighbors, and might also serve as a nucleus for a scientific association of our own people, which is much to be desired, and would also impart a practical character to our Mechanics' Institutions.

I am, Sir,

Your obt. servt.

HENRY MOYLE.

Sheep Walk, near Brantford, Dec. 15, 1851.

[We agree with our Correspondent as to the desirableness of the Geological Reports being written in a style as easily to be comprehended by general readers as possible; but we despair of ever seeing purely scientific subjects so treated as to be understood by those who do not care to learn the meaning of scientific terms, which are in most instances, peculiarly concise and significant. The geological and mineralogical Survey of so new and extensive a country as United Canada is indeed a herculean task, and to be done thoroughly, it will require much time and labor. Haste, in such matters, is seldom real progress. The practical application and money value of these researches to our agriculture, mining, and other industrial pursuits are only just beginning to be seen. Sure we are that the work could not be in better hands. Mr. Logan's acknowledged scientific and practical skill, guided by observing and descriptive habits of the greatest accuracy;—qualities, we believe, also possessed in a distinguished degree, by his coadjutors, Messrs. Hunt and Murray, cannot fail to secure public confidence in the truth and accuracy of the Geological Survey; on which our respected correspondent, would, we are sure, be the last to insinuate even a doubt. We would like to see, as early as practicable, the materials in the hands of the Provincial Geologist, worked up into a convenient volume,—popular in its character, yet strictly correct in its science; accompanied with an outline geological map, and practical hints and instructions to miners, agriculturists, &c. Whether the Survey has yet extended far enough to warrant the attempt, we know not; but nothing ought, in our opinion, to be left undone towards facilitating so interesting and useful an object. We would further suggest the

desirableness of forming in each of our principal cities—such as Quebec, Montreal, and Toronto, as complete a cabinet or museum of the minerals and fossils of the country, scientifically arranged, and *popularly described*, as the extent of present knowledge and research will admit; such museums would likewise gradually accumulate specimens from abroad, and in time might enlarge their boundaries, so as to embrace most or all of the departments of the wide and interesting field of Natural History generally. While thus exhibiting the natural products and curiosities of the country, these Institutions might easily be made the exponents of our industrial and social progress in agriculture, manufactures, and the useful and ornamental arts. Such a scheme, we think, would rank among the best means for improving the taste and educating the minds of the people, and of affording them, as well as strangers that visit us, just conceptions of the resources of this young and extensive country. Such a scheme is, in our estimation, well worthy of public and private support.]—*Editor.*

NEW BRICK MACHINE.

On Thursday of last we visited the Steam Brick Works of Tufts and Boyden, in Somerville, to witness the operation of a machine for making bricks from dry clay, invented and patented by Woodworth and Mower of Boston. This machine is of iron, simple, compact and massive, weighing seventeen tons, and was made by Lyman Kingsley, Esq., at his extensive works at Canton, Mass., and is a good sample of the substantial and perfect work for which Mr. Kingsley's establishment is justly celebrated. It works with great steadiness and precision, and turns out three thousand bricks per hour. The machine and the clay pulverizer are operated by a steam engine of twenty horse power. The clay is first dried, then ground, by passing between heavy rollers, then screened or sifted and passed into the machine in a uniform state, where it is subjected to the immense power of the machine, and a beautiful perfect face brick is produced, almost as smooth and dense as polished marble. The bricks are taken from the machine and immediately set in the kiln ready for burning, thereby obviating the necessity of spreading on the yard to dry before burning, as well as injury or loss from wet weather. By this process, a superior face brick can be produced at less expense than the coarsest common brick by the old method.

This machine is the result of three years' close application and hard study on the part of the patentees, Messrs. Woodworth and Mower, and may justly be considered one of the most valuable and important inventions that have been made. No one can witness its operations, and compare it with the old fashioned way of brick-making, without being filled with surprise and admiration.—*Boston Journal.*

WIRE-WORK FOR CEILINGS.—Some two years back you were the first to usher forth the application of wire work for ceilings in lieu of lath. Since that time but little has been done in it here in England, but the statement has been copied from your paper through all nations, and translated into all languages, and

the material is now being universally adopted. The objection to it here was its expense, but that ought to weigh but as a feather in the scale as compared with the security of life and property. I can say that the ceilings already finished are perfect, without even a crack in them; unlike the wood, here is neither contraction, expansion, nor absorption. Nor have we been idle in testing it in every way: it has been subjected to the severest trial by flame, without producing even the smallest effect of ignition: in case of fire in one apartment, to that alone it is confined. What is there that is so inflammable as the dry lath?—the ceiling falls, the lath is lighted, and destruction is inevitable. The cost has been reduced, viz. plain wire-work to two pence per square foot, and galvanized, to two pence three farthings per square foot.—*Builder.*

CHATSWORTH AND PAXTON.—On my way home, I passed three days at Chatsworth, where were the Fitzwilliams, and a very agreeable party. The principal object of admiration in that magnificent establishment is the conservatory, covering more than three quarters of an acre, built and laid out with the greatest taste and judgment. The whole is the work of Paxton, planned by his own genius and courage, contrary to the opinion of the eminent architects consulted, but now allowed by them to have been most successfully executed. Paxton is, probably the ablest gardiner in Europe, and has raised himself to eminence by native genius, unceasing activity and unblemished character. This is much to say of a man yet alive, but I do not expect to have ever to retract it. It is at Chatsworth alone the Duke of Devonshire's character can be fully appreciated. There, are seen and felt his generous hospitality, his unaffected friendly attentions, and a benevolence extending to every class, which I have never known surpassed—*Notes by Sir Robert Heron.*

LAND FORMATIONS IN THE HIGHER REGION OF NORTH AMERICA.—The eastern coast-line of Lake Winnipeg is in general swampy, with granite knolls rising through the soil, but not to such a height as to render the scenery hilly. The pine forest skirts the shore at the distance of two or three miles, covering gently rising lands; and the breadth of continuous lake surface seems to be in process of diminution, in the following way:—A bank of sand is first drifted up, in the line of a chain of rocks which may happen to lie across the mouth of an inlet or bay. Carices, balsam poplars, and willows speedily take root therein; and the basin which lies behind, cut off from the parent lake, is gradually converted into a marsh by the luxuriant growth of aquatic plants. The sweet gale next appears on its borders, and drift-wood, much of it rotten and comminuted, is thrown up on the exterior bank, together with some roots and stems of larger trees. The first spring storms covers these with sand, and in a few weeks the vigorous vegetation of a short but active summer binds the whole together by a network of the roots of hents and willows. Quantities of drift-sand pass before the high winds into the swamp behind, and, weighing down the flags and willow branches, prepare a fit soil for succeeding crops. During the winter of this climate, all remains fixed as the summer left it; and as the next season is far advanced before the bank thaws, little of it washes back into the water; but, on the contrary, every gale blowing from the lake brings a fresh supply of sand from the shoals which are continually forming along the shore. The floods raised by melting snows cut narrow channels through the frozen beach, by which the ponds behind are drained of their superfluous waters.

As the soil gradually acquires depth, the balsamoplayers and aspens overpower the willows; which, however, continue to form a line of demarcation between the lake and the encroaching forest. Considerable sheets of water are also cut off on the north-west side of the lake where the bird's eye limestone forms the whole of the coast. Very recently this corner was deeply indented by narrow branching bays, whose outer points were limestone cliffs. Under the action of frost, the thin horizontal beds of this stone split up, crevices are formed perpendicularly, large blocks are detached, and the cliff is rapidly overthrown, soon becoming masked by its own ruins. In a season or two the slabs break into small fragments, which are tossed up by the waves across the neck of the bay into the form of narrow, ridgeline beaches, from twenty to thirty feet high. Mud and vegetable matter gradually fill up the pieces of water thus secluded; a willow swamp is formed; and when the ground is somewhat consolidated, the willows are replaced by a grove of aspens.—*Sir John Richardson.*

How to Burn Coal.—The art of burning coal is a little properly understood as it ought to be. Too much coal is usually placed in the stove, by which the draught is destroyed and the gases are imperfectly consumed. The *Miners' Journal* of Pottsville says there are two errors in the way we burn coal, by which more than one half is wasted. 1st. We have to shut the door of our stove or furnace, to make a temporary over-combustion at one time, and at another time we have to leave open the door and let in cold air to cool off. 2. The gas that ascends our chimneys carries off with it a deal of coal that is unburned, merely coal in vapour, which gives out little heat for want of air to consume it. We lose the most of the unconsumed vapour of coal when the door is shut. When it is open the vapour is consumed, but the heat is reduced by a flood of cold air, and carried up the chimney. What is required then is an air-tight door over the ash-pit, through which you can let in just what air is necessary for quick or slow combustion as desired. The door that admits the coal should be tight, and should never be opened except to put coal in. A small flue should admit a stream of air, heated by contact with the stove, to mix with the gas on top of the fire. In buying a stove, if you find that the stove or furnace door must be left open when you want to moderate your fire, reject it; for it is essentially wrong in its construction, and it will consume three tons of coal where one would answer if the draft door were air-tight.

MR. GALTON'S EXPEDITION IN SOUTHERN AFRICA.—Letters have been received from the enterprising traveller, Mr. Galton, who our readers will remember, started for the Great Lake, via Walwich Bay, in September last. Mr. Galton writes, under date 1st of March, from latitude 52° south, longitude 16° 49 east. Mr. Galton arrived in the Damara country in October. He reports constant fighting and wars of reprisals between the Damara and the Namaquas, which commenced four years ago, but had lately increased in ferocity and extent; Jouker Afrikaner being a principal mover. The destruction of the village of Demarus, gathered around Mr. Kolbe's mission station, reported in the papers at the time, and the purchase of plundered cattle by white men, and had led to difficulties in the way of Mr. Galton's progress, and to the prospects of commerce. Mr. Galton on his arrival in that country, wrote to Jouker Afrikaner, acquainting him with the instructions he had received from the governor to establish friendly relations with the native tribes on the route to lake N'gami, with a

view to prepare them for future commerce, and to warn them against any attempts to dispossess them of their country; and intimating the displeasure of the British Governor at the oppression of the other tribes by the Namaquas. Jouker's answer was delayed a month, and was unsatisfactory, and Mr. Galton then rode straight to him with an escort of only three followers, and succeeded in thoroughly alarming him. He made Jouker write a most ample acknowledgment of his wrong to Mr. Kolbe; and advised him to make the same acknowledgement to the British Governor, which he did, and sent it by a messenger forthwith to the colony. Mr. Galton also made Jouker send for a neighboring captain of the red people, and made him also solemnly undertake to leave off oppressing the Damaras, and wrote a few simple laws to meet cases of cattle stealing, which were cordially agreed to. One of these laws provided for the equal punishment of Namaquas with the Damaras for stealing. Some of their own disputes were also voluntarily referred to Mr. Galton as umpire. Mr. Galton received much valuable and interesting information respecting the transactions in that part of the country for some years past, from the diary of Mr. Mahn, the longest resident missionary among the Damaras. Mr. Galton, at the dates of his letters, was to start for the interior in two days, but intimates his intention of returning that way in about six months. A considerable impression has been made on the native minds by Mr. Galton's visit, and a way appears to be prepared for the progress of European commerce and civilization in that direction at no very distant period, but very much will depend on the conduct of those here, who hereafter attempt to open out further relations with the natives.—*Cape Town Paper.*

Unprecedented Ocean Steaming.

The steamship *Pacific*, Capt. Nye, Collins line, has made twenty-two passages across the Atlantic:—

Longest, 12 days 8 hours.

Shortest, 9 days 19 hours and 34 minutes.

—The latter, no doubt the shortest passage, mean or true time, ever made. The average of all her passages is under eleven days.

The steamers of the Collins line have done better this winter than ever before. Their passages lately have been astonishing. Crossing the Atlantic to the westward in the middle of winter in less than eleven days is wonderful. The company, however, find it a losing business. Their expenses are enormous, and the income from the government and passengers too small to prevent serious loss. If the government does not come forward and give this line substantial aid, it will be abandoned. The Emperor of Russia has signified a desire to purchase these magnificent steamships to form a nucleus for a powerful steam navy. Cannot something be done at once, to prevent these vessels from falling into the hands of a foreign government?—*N. Y. Herald.*

Mr. Hiram Powers is engaged on a large allegorical statue of California, typified by a beautiful Indian female. In her hand is a divining rod, with which she points to a mass of metallic quartz, like that recently exhibited in the east nave of the Crystal Palace. The voluptuous form, the laughing eye, and the gorgeous richness of her cap, armlets, and bracelets of native ore, are intended to suggest the fascinations of the land of gold; while a warning moral is hidden in her right hand which grasps a bunch of thorns, but so disposes them as to be unseen at the first hasty glance of the spectator.

MISCELLANY.

A WINTER LAY.

(TRANSLATED FROM KRUMMACHER.)

Ah! why repositest thou so pale,
So very still in thy white veil;
Those cherish'd Father-land?
Where are the joyous lays of Spring,
The varied hue of Summer's wing,
Thy glowing vestment bland?

But half-attired, thou slumberest now,
No flocks to seek thy pastures go,
O'er vales or mountains steep:
Silent is every warbler's lay,
No more the bee hums through the day,
Yet art thou fair in sleep!

On all thy trees, on every bough,
Thousands of crystals sparkle now,
Where'er our eyes alight;
Firm on the spotless robe we tread,
Which o'er thy beaucous form is spread,
With glittering hoar-frost bright.

Our Father kind who dwells above,
For thee this garment pure hath worn,
He watches over thee;
Therefore, in peace, thy slumber take,
Our Father will the weary wake,
New strength, new light to see.

Soon to the breath of Spring's soft sigh,
Delighted thou again wilt rise,
In wondrous life so fair.
I feel those sighs breathe o'er the plain,
Dear Nature, then rise up again
With flour-wreaths in thy hair.

EARLY RISING.

The winter season, in a Canadian climate, may not appear the most opportune, in which to recommend this desirable and most valuable habit. The resolution and imagined self denial involved in the formation of this habit, constitute some of the most useful and important elements of human character. Early rising is naturally conducive to health of body, clearness and strength of mind, and success in the various pursuits of life. To witness at all seasons of the revolving year that glorious diurnal phenomenon, the rising of the bright orb of day, not only affords us the full natural advantages of the day, either for study or business, but to the reflecting mind may help us to perform its duties, and manfully bear its burthens. We hear people constantly complaining of the shortness and uncertainty of life; and yet how few make the most and best use of the time that is mercifully allotted them! Young people would find it to their improvement and happiness to ponder well this matter. By forming the invaluable habit of early rising, they secure a larger amount of mental and physical enjoyment, and practically lengthen out the span of their probationary existence.

Dr. Doddridge, an English divine, highly distinguished for piety and learning, has the following remark in reference to this subject. "The

difference of daily rising two hours earlier, supposing the same time of going to rest be observed, and the practice maintained for forty years, adds six years to a man's waking life!—and states that his great work, "The Family Expositor," was the fruit of early rising. Well might he adopt the sentiment of his family motto, *Dum Vivimus Vivamus*—"While we live let us live," on which he composed the following lines, pronounced by Dr. Johnson "the finest Epigram in the English language:"—

"'Live while you live,' the Epicure would say,
And seize the pleasures of the present day;
'Live while you live,' the sacred preacher cries,
And give to God each moment as it flies.
Lord, in my view let both united be!
I live in pleasure while I live to Thee."

THE CHARACTER OF A GOOD WIFE; BY SOPHOCLES, B. C., 491.

Faithful—as the lone shepherd's trusty pride;
True—as the helm, the bark's protecting guide;
Firm—as the shaft that props the towing dome;
Sweet—as to shipwreck'd seamen land and home;
Lovely—as a child, the parent's own delight;
Radiant—as morn that breaks a stormy night;
Grateful—as streams that in some deep recess
With crystal rills the parting traveller bless.

WONDERS OF THE UNIVERSE.—What mere assertion will make any one believe that in one second of time, in one beat of a pendulum of a clock, a ray of light travels over 192,000 miles, and would therefore perform the tour of the world in about the same time that it requires to wink with our eyelids, and in much less than a swift runner occupies in taking a single stride? What mortal can be made to believe, without demonstration, that the sun is almost a million times larger than the earth, and that, although so remote from us, a cannon-ball shot directly towards it, and maintaining its full speed, would be twenty years in reaching it, yet it affects the earth by its attraction in an appreciable instant of time? Who would not ask for demonstration, when told that a gnat's wing, in its ordinary flight, beats many hundred times in a second; or that there exist animated and regularly-organized beings, many thousands of whose bodies laid close together would not extend an inch? But what are these to the astonishing truths which modern optical inquiries have disclosed, which teach us that every point of a medium through which a ray of light passes is affected with a succession of periodical movements, regularly recurring at equal intervals, no less than five hundred millions of millions of times in a single second? That it is by such movements communicated to the nerves of our eyes that we see; nay more, that it is the difference in the frequency of their recurrence which affects us with the sense of the diversity of colour. That, for instance, in acquiring the sensations of redness, our eyes are affected four hundred and eighty-two millions of millions of times; of yellowness, five hundred and forty-two millions of millions of times; and of violet, seven hundred and seven millions of millions of times per second. Do not such things sound more like the ravings of madmen than the sober conclusions of people in their waking senses? They are, nevertheless, conclusions to which any one may most certainly arrive, who will only be at the trouble of examining the chain of reasoning by which they have been obtained.—*Sir John Herschell.*

THE NEW YEAR.

WELCOME the glad New Year!
 With blessings on its fleecy wing,
 Only the wicked fear
 Thy advent, dawning year,
 And fly the judgments thou may'st bring.
 Welcome the glad New Year!
 Let every lowly heart aspire,
 To use thy moments well;
 And let thy progress tell
 Of hopeful souls still soaring higher.
 Welcome the glad New Year!
 May loving friends be spared to see,
 Many a glad new year
 Their welcome blessings bear,
 Leading to bright Eternity!

THE MORAL COURAGE.—Never be ashamed of thy birth, or thy parents, or thy trade, or thy present employment, for the meanness or poverty of any of them; and when there is an occasion to speak of them, such an occasion as would invite you to speak of any thing that pleases you, omit it not, but speak as readily and indifferently of thy meanness as of thy greatness. Primislaus, the first King of Bohemia, kept his country-shoes always by him, to remember from whence he was raised; and Agathacles, by the furniture of his table, confessed that, from a potter, he was raised to be the King of Sicily.

JEREMY TAYLOR.

THE SCOTTISH SHEPHERD.—The state of mind induced among the peasantry of the mountainous districts of Scotland by snow storm is thus pleasingly described by the Ettrick Shepherd:—"The daily feelings naturally impressed upon the Shepherd's mind, that all his comforts are so entirely in the hands of Him who rules the elements, contributes not a little to that firm spirit of devotion for which the Scottish Shepherd is so distinguished. I know of no scene so impressing as that of a family sequestered in a lone glen during the time of a winter storm; and where is the glen in the kingdom that wants such a habitation? There they are left to the protection of heaven; and they know and feel it. Throughout all the wild vicissitudes of nature, they have no hope of assistance from man, but expect to receive it from the Almighty alone. Before retiring to rest, the Shepherd uniformly goes out to examine the state of the weather, and make his report to the little dependent group within; nothing is to be seen but the conflict of the elements, nor heard but the raving of the storm. Then they all kneel around him while he commends them to the protection of heaven; and though their little hymn of praise can scarcely be heard even by themselves, as it mixes with the roar of the tempest, they never fail to rise from their devotions with their spirits cheered, and their confidence restored, and go to sleep with an exhalation of mind of which kings and conquerors have no share."

TOBACCO.—The total quantities of tobacco retained for home consumption, in 1842, amounted to near 17,000,000 pounds. Professor Schleiden gives a singular illustration of the quantity of tobacco consumed. North America alone produces annually upwards of 200,000,000 pounds of tobacco. The combustion of this mass of vegetable material would yield about 340,000,000 pounds of carbonic acid gas, so that the yearly produce

of carbonic acid gas from tobacco smoking alone cannot be estimated at less than 1,000,000,000 pounds—large contribution to the annual demand for this gas, made upon the atmosphere by the vegetation of the world.

A PICTURE.

Strolling through the Shockoe Hill Burying Ground, a few evenings since, says the Richmond Times, we unexpectedly became an eye witness to a scene that even angels might look down upon with an approving eye.—Within the railing of a neatly though plainly enclosed section, near the southern boundary of the burying ground, we discovered three sweet little girls—the eldest had probably seen ten, and the youngest not over six summers. The trio of little innocents had noiselessly gathered around a little green mound which appeared to be the newly made grave of an infant. The elder sister—for sisters we judged them to be—occupied an attitude of deep devotion, kneeling softly and gently by the side of a little green mound, which hid from view the loved form of a little sister or brother, who, "in the morn and liquid dew of youth," had been translated to a happier sphere. On either side, speechless and motionless, stood her little sisters, whose eyes, like her own, were running down with the meltings of their pure and innocent hearts.

Not an audible whisper escaped the lips of the little mourners. The orison of the kneeling child was in secret, but her whole manner bespoke the eloquent nature of the prayer she offered up to the throne of Heaven for the little one. That prayer, we doubt not, has been registered in Heaven; and if, in after life, its author should waver in the path of rectitude, it will plead trumpet-tongued in her behalf. Fearing that our presence might disturb the secret devotions of the sweet little trio, we paused, and quietly took a position which would enable us to watch, unobserved, the action of the devout little mourners. The elder sister held in her right hand a bunch of flowers—the earliest which a genial spring had called forth—consisting of violets and hyacinths. These she would press to her lips, and then scatter them over the grave of the little child. The sun was rapidly descending the western horizon—his last rays were gilding the tops of the obelisks which mark the repose of the opulent or the gifted, and the shades of evening were fast gathering around the holy scene. Softly and reverently the little sister arose from her kneeling posture, and as she arose we caught a glimpse of her sadly sweet face; it was illumined by an angelic radiance, which for a moment induced us to believe her more than mortal. Gently taking her sisters by the hand, the little trio of innocents softly left the enclosure, the eldest sister closing the gate with a degree of caution which seemed to indicate her great anxiety, not to disturb the slumbers of the little child reposing in the enclosure. After casting one long lingering look at the little green mound, the sisters departed, and with the hurried eager steps of childhood soon reached the street. After they had left we drew near the spot rendered sacred by the outpourings of their pure hearts. One little mound only broke the even surface of the section—the violets and the hyacinths were there, and we imagined they distilled a more delicious perfume on the "desert air" than the rarest exotics cultivated by the horticulturist. No stone told the name, age or sex of the sleeping child, but his resting place has been indelibly stamped on our memory.

GREASING AXLES.—The neglect of greasing cart and wagon wheels, not only injures the wood or iron work by the additional friction thereby induced, but it is even more injurious to the poor animals, whose business it is to draw the load, thus rendered additional burthensome. A farmer observed to us that he found in practice the best oil for this purpose both the cheapest and most efficient. All sorts of impure and dirty fat, so frequently used, have a tendency after a short time to retard, rather than to facilitate motion. Grease your wheels then whenever they require it with the best material.

THE REALITIES OF LIFE.—The seeds of great empires, like the germs of all true greatness, in both the natural and the moral world, are imperceptibly sown. The acorn is blown about for months, the sport of every fitful breeze, before it finally takes root in the soil; and season must follow season, and fashions ebb and flow for many years, before the matured oak spreads its branches to the skies, and bids defiance to the wintry blast. Myriads of little shell-fish die, and for centuries the waters roll above them before the coral reef is formed; but it is formed, and slowly yet surely raises its head above the waves, and wrecks the proudest vessel as it proceeds on its way. A Shakespeare lies in his cradle, with few eyes looking down upon his infant slumbers—he grows up from boyhood to youth, and from youth to manhood, without its being known that a mighty man is born into the world. He wanders among his native woods and streams, inquiring and thinking, thinking and inquiring, little cared for by the great men of the earth. He comes to London, poor, friendless, and with much difficulty keeps himself from starving by holding horses, and shifting scenes at theatres. He works for the day that is passing over him, and finds it long before he can spare thought for the morrow. He retires, at length, like a respectability to his native place, dies as his fathers had died before him; and on his deathbed, when his last hour is near, the beams of the sun dance on the window-panes as usual, the grass grows as usual, the flowers open their buds as usual, the evening star that night gazes wistfully down as usual, people eat and drink, laugh and chat, make merry and make money, go to bed, put their foolish heads in nightcaps, and dream foolish dreams as usual; and the world next morning rolls on as usual; as though Shakespeare had not died, as though Shakespeare had never lived, as though the world had nothing to do with Shakespeare. But Shakespeare lived, and Shakespeare still lives, and Hamlet, Lear, Othello, and Macbeth, still remain, and are realities amid a world of nothings. As it is with the growth of a coral reef, as it is with the growth of a Shakespeare, so it is with the growth of a great empire.

—*Frazer's Magazine.*

FIVE HUNDRED PERSONS DESTROYED BY A WATER-SPOUT.—On Saturday intelligence was received at Lloyd's, under date Malta, Monday, the 8th instant, of a most awful occurrence at the island of Sicily, which had been swept by two enormous waterspouts, accompanied by a terrific hurricane. Those who witnessed the phenomena describe the waterspouts as two immense spherical bodies of water, reaching from the clouds, their cones nearly touching the earth, and, as far as could be judged a mile apart, travelling with immense velocity. They passed over the island of Marsala. In their progress houses were unroofed, trees uprooted, men and women, horses, cattle, and sheep were raised up, drawn into their vortex, and borne on to destruction: during their passage rain descended in cataracts, accompanied with hailstones of enormous size, and masses of ice. Going over Castellamarre, near Stabia, it destroyed half the town, and washed 200 of the inhabitants into the sea, who all perished. Upwards of 500 persons have been destroyed by this terrible visitation, and an immense amount of property, the country being a waste for miles. The shipping in the harbour suffered severely, many vessels being destroyed and their crews drowned. After the occurrence numbers of dead human bodies were picked up, all frightfully mutilated and swollen.

Literary Notices.

TRANSACTIONS OF THE NEW YORK STATE AGRICULTURAL SOCIETY; VOL. 10, 1850. Albany: Printed by order of the State Legislature, 1851.

The indefatigable and respected Secretary of the New York Society has again favoured us with a copy of their Transactions, which we inadvertently omitted to acknowledge in our last number. We, in common with others connected with the Agricultural press, both of the Old World and the New, have been accustomed to look forward with much interest to this annual exposition of what our near and influential neighbours have done, or are doing, in the important cause of Agriculture, and its kindred arts. It has been pleasing to witness a progressive, and during the last three or four years, a rapid improvement. Highly as we esteemed the merits of the last volume of the Transactions, the present is, we think, in some respects superior, and with several of its later predecessors, indicates that Agriculture, both as a science and an art, is making a healthy and satisfactory progress in the State of New York. Besides the report of County Societies and several valuable contributions from individuals, the volume is enriched with a Prize Essay on Agricultural Dynamics, and a very elaborate survey of the County of Seneca; embracing its history and settlement, state and progress of its Agriculture, Geology, Natural History &c., neatly illustrated with maps, sections, and cuts of fossil remains and botanical specimens. This survey was prepared by John Delafield, Esq., of Geneva, late President of the Society; an enlightened and enterprising practical farmer; and we hesitate not to say that it would do honour to the Transactions of any of the older Agricultural Associations of Europe: it as well as Mr. Thomas's Essay will, we trust, appear in a separate form. We have in this volume, consisting of 300 pages and a number of well executed engravings, much that will interest and instruct the enquiring farmer out of the State of New York; and we shall not neglect to cull something from it, that will benefit both our readers and Agricultural Societies. Mr. Johnson will please to accept our grateful thanks.

A COMPARATIVE VIEW OF THE CLIMATE OF WESTERN CANADA, considered in relation to its influence on Agriculture. By Henry Youle Hind, Mathematical Master and Lecturer in Chemistry and Natural Philosophy, at the Provincial Normal School; Toronto: Brewer, McPhail & Co. 1851.

Mr. Hind has succeeded in compressing within the limits of a small pamphlet, a mass of useful and interesting information, relative to the climate and capabilities of the Western Peninsula of Upper Canada. It has long been known that this Section of the Province possesses a milder climate, a moister atmosphere, and a more fertile soil, than other portions of this continent having the same, or even a lower latitude. The two former conditions may be satisfactorily accounted for by the influence of the immense lakes by which this section of country is almost surrounded. Mr. Hind has been at considerable pains to collect and arrange in a convenient form, from authentic sources, much valuable information relative to the Meteorological character of this now rapidly settling portion of Canada, compared with other portions of

British America and the United States. We may again refer to this publication, recommending it, in the mean time, for the perusal of our readers, and all persons looking out for a settlement.

We embrace the present opportunity of mentioning the recent appearance of Mr. Hind's "*Lectures on Agricultural Chemistry*," in a corrected and much enlarged form, by the same publishers. It is encouraging to find that a taste for scientific reading is increasing among our farmers, who will find in Mr. Hind's second edition much to interest their understandings, and, if properly carried out, to improve and render more profitable their practice. Unless farmers read and think; work with their heads as well as their hands, they must necessarily fall behind the rest of the community, not only in intelligence and in their specific calling; but as a necessary consequence, in social position and political influence. We hope that this great truth is beginning to be generally perceived and appreciated.

JOURNAL AND TRANSACTIONS OF THE LOWER CANADA AGRICULTURAL SOCIETY VOL. 4. R. W. LAY: Montreal, 1851.

We have to thank Mr. Evans, the Editor of this Journal, and the Secretary of the Lower Canada Agricultural Society, for a complete set for the past year. The "getting up," as it is technically termed, of this monthly periodical is exceedingly neat, and we have much pleasure in bearing our humble testimony to the sound practical judgment which characterizes its matter, whether original or selected. Mr. Evans has long been favourably known in Canada, as an intelligent and practical Agriculturist, and has done much with his pen, and otherwise, to improve the agriculture of his adopted country. We earnestly hope that the Journal is receiving from our Lower Canada brethren that liberal support to which it is so justly entitled. We could like to be assured that some copies were taken by our Societies, or individuals, in the Upper Province, when, perhaps, a similar compliment would be paid to our labours in the Lower. We throw out this hint, believing it would be mutually advantageous. It is high time that both sections of the United Province should become better acquainted with each other's doings and wants; and that we should learn to think and feel as *one people*: and a united effort to promote the interests of our agriculture, seems to us to afford the readiest means of obtaining so important and desirable an object.

SCOBIE'S CANADIAN ALMANAC, AND REPOSITORY OF USEFUL KNOWLEDGE, FOR 1852. Toronto: Hugh Scobie.

The continuation of this most useful, and we should now think, indispensable publication, is a convincing proof of the material and social progress of the country. A work consisting of 96 closely and neatly printed octavo pages, abounding in matter carefully selected and condensed, with which every adult person in the country must feel it advantageous, if not necessary to be acquainted, with a well executed map of a large portion of the Province, and sold at the retail price of *Seven Pence Half-*

penny, needs no commendation from us. Nothing short of an enormous sale can ensure the spirited publisher against heavy loss; and as the advent of each successive year is accompanied by this most useful Directory, we may fairly presume that the public appreciate its merits. No family ought to be without it; and nothing better could be sent "to the good people at Home," informing them correctly of the progress and actual condition of this young and rapidly improving country. We regret that our presentation copy was not received in time to enable us to give an earlier notice of this deservedly increasing popular publication.

DESTRUCTIVE FIRE IN THE MUSEUM OF THE HIGHLAND SOCIETY EDINBURGH.

We deeply regret to learn from our recent English papers that a large portion of the extensive premises occupied by the well known seedsmen, Messrs. Peter Lawson and Sons, and the Highland Agricultural Society of Scotland, has been accidentally destroyed by fire. The Society's Library was burnt; but whether their numerous models of machinery, paintings, &c., sustained the same fate is not stated: we sincerely hope not. The stock of the Messrs. Lawsons was very large, and much injured; there being in subjacent cellars seeds of the value of £16,000. It was these eminent horticulturists that exhibited that splendid collection of the vegetable products of Scotland in the late World's Exhibition, which elicited such general admiration. Both parties, we are glad to find, were insured.

MR. MECCHI'S BALANCE SHEET.

This long desiderated document we find has come at last. Mr. Mechi at a recent meeting of the London Society of Arts, at which a number of farmers were present, produced the balance sheet of his celebrated Tip-tree Hall farm, in the county of Essex, for the past year. The result is an thing but encouraging. From October 30th 1850 to October 30th 1851, a clear loss of £653 12s. 4d. sustained; and this on a farm of about 150 acres, and after 7 or 8 years of lavish expenditure in manures and improvements, usually termed "high farming!" This loss is exclusive of any charges for skill and management, or domestic maintenance. When we were on this world renowned farm in 1845 our decided impression was, (which we afterwards announced in a printed report,) that liberal and scientific as might be Mr. Mechi's system of farming, with so large an amount of capital (some six or seven thousand pounds, if we remember correctly,) invested in buildings, implements, and machinery on so limited an area, could never be made to pay; and under the present reduced rates of farm produce, we are not at all surprised at the before mentioned result. What will our readers here in Canada say to a single item of Mr. Mechi's outlay during last year, viz, £1553 17s. 6d. for oil cake and grain, not produced on the farm, for the keep and fattening of stock! Mr. Mechi is a very intelligent, persevering, and generous hearted man, and for his own sake and that of British farmers generally, we should rejoice to hear that he was turning his ability and capital to a better account.

Editorial Notices.

⚡ We do not hold ourselves responsible for the opinions that may be expressed in essays, reports, or correspondence, that may appear in this Journal; and we shall always allow a reasonable portion of our space, for the discussion of subjects coming within our prescribed limits, if conducted with a view to practical utility and the discovery of truth. *Questions at all involving party considerations of political or theological matters, are altogether unsuited to our pages.*

H. T.—We will try to procure the information you desire, and inform you in our next. The amount of the growth of Hops in England is liable to great fluctuations. Hops may be and are, to our personal knowledge, cultivated profitably in Canada, on a small scale. Particulars hereafter.

INQUIRER, is recommended to purchase and study Hitchcock's Geology, a cheap and excellent work for beginners, published by Newman & Co., New York. Dana's Manual of Mineralogy (reduced from his larger work) is, perhaps, the best and cheapest you can get—it is published for one dollar by Durrie & Peck; Newhaven. Most Canadian book-sellers will procure these works. Your other questions require time to consider: our limits do not properly embrace them.

SWEEPSTAKES FOR DURHAM HEIFERS.—We call the attention of short-horn breeders to the communication from the Hon. Adam Fergusson, in a previous page, and as the subject is one of very considerable importance, we hope to receive shortly the names and subscriptions of several competitors. *Who will be the first to respond?*

TORONTO CHRISTMAS SHOW OF BUTCHERS' MEAT.—If anything can demonstrate the importance and money value of improving the breeds of cattle, sheep and swine, the late splendid Christmas display of our butchers must have been regarded by all observers as perfectly satisfactory. Better beef or mutton we do not believe could be found in any part of the world. We have no space for details. Thanks to Agricultural Societies, which have awakened in many of our farmers a spirit of enterprise which has thus led on to profitable improvement. We observe from the papers that in Kingston, Cobourg, Hamilton, London, and other places, there was a similar result.

PRIZE ESSAY.—Our readers will find in the first portion of this number the Prize Essay on Agriculture, the following were the advertised regulations:—

“AGRICULTURAL PRIZE ESSAY.

A Gold Medal of the value of £10, will be given by the Directors of the Johnstown District Agricultural Society, for the best Essay upon Agriculture and its advantages as a pursuit, to be read before the Agricultural Association at the Provincial Exhibition, to be held at Brockville in September next. The Essay to be written by a Canadian Agriculturist whose pursuits are wholly Agricultural,

to be sent in to the Directors of the Society, before the 15th day of July next, under seal, with the name of the writer in a sealed note. The Directors reserve the right of deciding whether the Essay is worthy a premium or not. The Essay to be the property of the Society, and to be in such condensed form as to permit its delivery within the space of forty minutes.

“GEORGE S. McCLEAN,
SECRETARY.

“Brockville, 15th February, 1851.”

NOTICE.

⚡ The present number, as intimated in our last, we send to all subscribers of last year; those who intend renewing their subscriptions will please do so without delay, as our next number will not be sent unless ordered.

Toronto Markets.

	S.	D.	S.	D.
Flour 7/4 bbl 196 lbs	15	0	@	16 3
Wheat 7/4 bushel 60lbs	2	6	@	3 0
Barley 7/4 bushel 48lbs	2	0	@	2 3
Rye 7/4 bushel	2	3	@	2 8
Oats 7/4 bushel 34lbs	1	0	@	1 1
Pease 7/4 bushels 60lbs	2	6	@	2 1
Potatoes 7/4 bushel	2	6	@	3 0
Beef 7/4 lb	3	@		3
Beef 7/4 100lbs	12	6	@	17 6
Butter 7/4 lb	0	7	@	6
Hay 7/4 Ton	40	0	@	50 6
Pork 7/4 100lbs	15	0	@	22 1
Turkies	2	0	7/4	3 5
Geese	1	3	7/4	1 6
Chickens 7/4 Pair	1	0	@	1 6
Ducks 7/4 Pair	1	6	@	2 6
Firewood 7/4 Cord	13	0	@	16 1
Straw 7/4 ton	22	6	@	27 6
Mutton, 7/4 lb	0	3	@	0 3

The Canadian Agriculturist,

EDITED by G. BUCKLAND, Secretary of the Board of Agriculture, to whom all communications are to be addressed, is published on the First of each month by the Proprietor, William McDougall, at his Office, corner of Yonge and Adelaide Street, Toronto, to whom all business letters should be directed.

TERMS.

SINGLE COPIES—One Dollar per annum.

CLUBS, or Members of Agricultural Societies ordering 25 copies or upwards—Half a Dollar each Copy.

Subscriptions always in advance, and none take but from the commencement of each year. The vol for 1849-50-51, at 5s. each.

N. B.—No advertisements inserted. Matter however, that possess a general interest to agriculturists, will receive an Editorial Notice upon a personal or written application.

Toronto—Printed at the Agriculturist Press—Yonge Street.