Agriculture.

FROM FIRST LESSONS IN SCIENTIFIC AGRICULTURE, BY J. W. DAWSON, L. L. D., F. R. S., PRINCIPAL OF McGILL UNIVERSITY. JOHN LOVELL, Montreal.

CHAPTER V.

§5. *Recapitulation.*

Before leaving this part of the subject, it will be useful to repeat the most important of the conclusions deducible from what has been already stated.

We have seen that plants consist of organic substances, differing from any forms of dead matter, and of inorganic matters derived from the mineral matter of the soil.

The organic part of plants we have found to consist of three gases, oxygen, hydrogen and nitrogen, and one solid substance, carbon; and these are obtained in the following ways:—

1st, The oxygen of plants is obtained principally from water and carbonic acid. 2ndly, Their carbon is nearly all derived from carbonic acid. 3rdly, Their Hydrogen is obtained principally from water, but probably in part from ammonia. 4thly, Their nitrogen is principally derived from ammonia, and partly from nitric acid. 5thly, A portion of all these substances is obtained by plants from the remains of other vegetables which have existed before them. In general, plants derive the materials of their organic part from water, carbonic acid, and ammonia or nitric acid, floating in the atmosphere, or brought down in rain and dew, or disengaged in the soil; and in so far as this part of the food of plants is concerned, it chiefly belongs to the farmer to supply to the soil substances capable of affording ammonia, or nitric acid, and carbonic acid. Some of the reasons why these views of the supply of food to vegetation should be adopted, as well as some of their practical applications, have already been mentioned. They will, however, more fully appear after we have examined the structure of plants and the means by which they convert their food into the various substances for which they are cultivated.

CHAPTER VI.

THE STRUCTURE OF PLANTS.

§1. *General Structure.*

The substances which we have viewed as constituting the food of plants, when taken into the system of a vegetable, have entered into a chemical and vital laboratory, where they are destined to undergo a series of changes, ending in their assuming forms and properties very different from those which originally belonged to them. It is therefore necessary that we should consider the organs of plants; the vessels or utensils, as it were, which nature employs in converting the unorganized matter of the soil and air into food for men and animals.

The general structure of all plants is nearly the same. The wood of the hardest tree, as well as the stem of the most delicate herb, is composed of an immense number of very small tubes and cells, whose sides consist of woody matter, enclosing cavities suited for containing or transmitting sap or other fluids. These cells and tubes assume many different forms, varying from those of nearly round bags or bladders to those of long pipes, sometimes extending through the whole length of a plant. They also differ very much in dimensions, direction, and mode of arrangement; and it is to these differences that we must ascribe the various degrees of coarseness and fineness, toughness and brittleness, hardness and softness, which we observe in the wood of different trees, as well as the various kinds of texture which appear in the organs of every individual plant. To examine these varieties of structure, and the purposes which they serve, is a pursuit full of interest and instruction; for the present, however, we must content ourselves with a very general outline of the subject, taking for our example the structure of trees, which are the largest and most perfect specimens of vegetation.

The trunk and branches of a tree may be viewed as consisting of three parts—Bark, Wood, and Pith. The true Bark consists of a number of cells, closely embracing the tree, of a white or brownish color on the older parts of the trunk, and green on the young extremities of the twigs. This inner or true bark is covered and protected from the air by an outer skin or covering, which in some trees, as the white birch, consists of numerous thin and tough layers. In some plants, as the grasses, this outer bark is the only external covering which appears, and in these plants it consists in part of dense inorganic matter, constituting the strongest part of the stem. The Wood is principally composed of cells and vessels of various forms and sizes, arranged lengthwise in the stem, and crossed by bundles of cells placed horizontally, and extending from the centre of the wood to the bark, so as to form thin plates stretching across the wood, and called the silver grain, or medullary rays. The office of these is supposed to be that of conveying fluids from the bark to the heart of the tree. The Pith, which is present only in young branches and small stems, consists of large cells placed horizontally, and it probably serves to store up superabundant sap till it is required by the plant. These structures, though most obvious in the trunk, are continued into the branches, and, in some degree, into the leaves. Though the structure which we have noticed prevails in trees, and in a great number of herbaceous plants, there is a large proportion of the vegetable kingdom which shows no regular arrangement of bark, wood and pith; and the whole of the grains and grasses are of this last kind. In these plants, however, the parts discharging the different functions of wood and bark are not wanting, but rather intimately united, instead of being separated into different portions. We may now consider the functions of those organs which belong to nearly all plants.

§2. *The Root.*

The larger branches of the root, like those of the trunk, consist of bark and wood; but in their smaller ramifications, both bark and wood become soft, porous, and easily penetrated by water; and these minute and greatly divided extremities of the roots, penetrating to every part of the soil around a plant, are its true mouths or feeders. The spongy rootlets are capable of taking only fluid food; no particle of clay or other undissolved matter can enter them; they absorb water, and this in so large a quantity that a sunflower three feet high has been stated to draw from the soil thirty ounces of water in twelve hours of a sunny day. But the water of the soil is not pure; it contains a great variety of mineral and other substances in solution, and these it must carry to the roots of every plant which grows upon it. Do all plants, then, which can grow on the same soil, require from it the same kinds of food? Experiment shows that this cannot be the case. If a pea and a plant of wheat grow side by side, and if both be gathered and burned, the ashes will be found to contain a large proportion of silica or flint, which served to strengthen its straw, while those of the pea will be found to afford scarcely any of this earth. The water of the soil must have brought a certain quantity of silica to the roots of the pea as well as to those of the wheat, but by the former plant it was rejected as useless, while to the latter it was absolutely necessary. It becomes, therefore, an interesting question whether the roots themselves have the power of selecting from the soil what is required by the plant, or whether they absorb all matters indifferently, and leave to the other parts of the plant the office of selecting the most proper kinds of food.

This point has been much disputed; it may however be rendered more simple by a reference to animals. Of these we know that every species is endowed with the skill necessary for choosing the most suitable nourishment, and yet that the ordinary food of each includes much that must afterwards be rejected; while all are liable occasionally to mistake what is poisonous for what is nutritive. In the same manner it can be shown that plants altogether refuse to receive substances even when placed in contact with their roots in a soluble state; and yet that they do absorb much which they afterwards reject, and in some instances that they admit matter which proves highly injurious or poisonous to them. In plants also, as in animals, there are always matters of various kinds, which have served some purposes in their economy, but have finally become useless; and the roots of plants are the organs by which the excretion of these matters is effected.

IN SEASON!

Winter is coming!

THE SUBSCRIBER has on hand a Supply of strong and substantial

READY-MADE CLOTHING,

suitable for Fall and Winter wear, consisting of—
OVER COATS, in Pilot and Seal Cloths,
PANTS, in Black and Fancy Doeskins;
VESTS, in Homespun, Black Cloth and Fancy Doeskins.

The above having been manufactured under the subscriber's own superintendence, he can with confidence recommend them to the public for their DURABILITY and CHEAPNESS. The inspection of Farmers, Mechanics and Laborers, is particularly invited before purchasing elsewhere.

Also, on hand, Beaver, Pilot and Seal CLOTHS, which will be made up to order on the most reasonable terms.

☞ Call and judge for yourselves. ☜

P. REILLY.

Ch. Town, Oct. 12, 1864. 2m ex. & r. w.

NOTICE!

ALL PARTIES INDEBTED TO GEORGE McDONALD, Tailor, would oblige by settling as soon as possible.

Charlottetown, June 29, 1864. tf

Notice to Farmers!

MANNY'S celebrated MOWING and REAPING MACHINES, which save immense labor and money, have JUST ARRIVED in the steamer Commerce. The subscriber expects that all agents and others wanting them will send their orders forthwith, as the supply is limited. Farmers who desire to preserve the life and health of their young hands, especially their females, who are so severely worked by the old mode of cutting grain crops, and who also desire to economise their money, will do well to secure one of the above named Machines as speedily as possible.

R. J. CLARKE,
Orwell Cheap Store, from a Needle to an Anchor.

July 13, 1864.

DR. LA'MERT
ON
SELF-PRESERVATION.

PRICE WITH ENGRAVINGS AND CASES, 1s. 6D.; BY POST, 3s.

SELF-PRESERVATION: a popular Essay on Nervous and Physical Debility, resulting from injurious habits contracted in youth, or excesses in maturity, which by prematurely exhausting the functions of manhood, destroy the happiness of Married Life, or prevent the fulfilment of engagements that constitute the most cherished objects of existence.

By Dr. LA'MERT, 37 Bedford Square, London, Licentiate of the Royal College of Physicians of Edinburg; Member of the Royal College of Surgeons, England, &c.

The above work contains most useful and interesting information on the physiological changes which occur in the Reproductive System during the periods of youth, puberty, and manhood; and on the due attainment of that degree of functional vigour upon which the hopes of posterity depend. It also points out how all the attributes of manhood can be preserved to an advanced period of life, how they are lost, and how they can be recovered. It is free from the gross exaggerations, alarming descriptions, and dangerous remedies so generally resorted to by persons, who, practising with false medical qualifications, inflict most serious injuries, and render judicious treatment frequently abortive.

The author is the only legally qualified practitioner whose name stands on the 'Medical Register,' (the sole test of medical qualification) who has been exclusively engaged for a series of years in the treatment of the various functional disorders of the nervous and reproductive system, which, owing to the great discoveries of modern science, are rendered subservient to a rational, simple and easy mode of treatment.

At home for consultation daily from ten till two, and from six till eight, either personally or by letter—37 Bedford square, London, England.

Patients residing in the Colonies can be successfully treated by correspondence, and remedies can be forwarded in secrecy and safety to any address.

"SELF-PRESERVATION"

may be had of the undermentioned Agents, price 25 cents; free by post, 30 cents:—

HALIFAX, N. S.—Mr. Johnson, Chemist.
YARMOUTH, N. S.—Messrs. Young and Baker, Booksellers.
SYDNEY, C. B.—Mr. J. P. Ward, *News* Office.
ST. JOHN, N. B.—Messrs. H. Chubb & Co., *Courier* Office.
CHARLOTTETOWN, P. E. I.—Mr. J. Ings, *Islander* Office.

Charlottetown, Nov 4, 1863. 1y

ADVICE
TO THE
FARMERS OF P. E. ISLAND.

AS the Season for Harvest operations is approaching, and as the Crops promise to be unusually abundant, the undersigned begs to remind FARMERS throughout the Island that he has just received an Invoice of his Stock of

Manny's Celebrated and Wonderful
MOWING & REAPING MACHINES,

which save immense time, labor and money to those who use them, as is proved by the well established fact that they will enable a *Farmer* to save his crops four or five weeks sooner, and at less than half the cost, than he could do the work by the old fashioned Hook and Scythe, now rapidly going out of use, with the older and still more useless Flail. No enterprising or temperance Farmer should be without one of those wonderful Machines; the cost is comparatively trifling, and no man who is able to bear the cost should think of hiring one, as before it came to his turn to hire one of the Machines that might be in his neighborhood, he would, perhaps, lose the chance of securing and selling his crop to advantage.

The MOWING and REAPING MACHINES were never in greater demand in the United States than at present. The scarcity of manual labor in that country, caused by the number of Farmers killed and wounded in the present War, renders such Labor-saving Machines more desirable than ever, and it will be almost impossible to secure a sufficient supply hereafter for the use of the agriculturalists of this Island. NOW is the time to secure them. The undersigned, knowing that they would be in great demand, ordered a considerable number of them for the use of the Farmers of this Island but could not get more than half he required, which he is prepared to sell for Cash or approved credit, for one or two years, if they are ordered before the 26th instant.

The following Agents will act for the Subscriber in selling those extraordinary and beautiful Machines, which are so well adapted for saving labor and money; and the Subscriber hopes that they will send their orders immediately and use their best exertions to promote their sale, and thereby advance the best interests of the Colony. These Machines having arrived on Saturday, 9th instant, in the steamer Commerce, from Boston, one of them, together with some PATENT PLOUGHS, will be on exhibition at the "North American Hotel," where an office will be opened for the sale of all such goods during the season, by

R. J. CLARKE,
Of Orwell Cheap Store, from a Needle to an Anchor.

July 13, 1864.

AGENTS:

W. E. Dawson and W. W. Irving, Esqrs., Charlottetown.
F. P. Norton and Thomas Owen, Esqrs., Georgetown.
Mr. Thomas Annear, Summer Hill, Montague.
Mr. J. McDougall, Grand River Bridge.
Mr. J. T. Truelove, Dundas, Lot 55.
Messrs. G. McKay & Son, New London.
J. A. McLean, Esq., St. Peter's Bay.
J. C. Hall, Esq., Tignish.
G. W. Howlan, Esq., & Mr. Jas. Broderick, Cascumpec.
Mr. R. J. Clarke, Spring Grove.

THE LONDON AND LANCASHIRE
FIRE AND LIFE
INSURANCE COMPANY,

HAVING A LARGE PAID UP CAPITAL,
ACCEPT ALL CLASSES OF RISKS,
At Reasonable Rates of Premium.

CHARLES YOUNG, Agent.

October 19, 1864.

A FINE CHANCE FOR SPECULATORS
—AND—
ENTERPRISING MN!

THE undersigned has been instructed by the Owners to offer for SALE, or to RENT, several valuable FREEHOLD and LEASEHOLD PROPERTIES, and FARMS, in BELFAST and otherparts of the Island, in good cultivation, well wooded, and possessing other advantages; and for which good and valid titles, and immediate possession can be given.

Also, four LOTS, being the residue of thirteen Building Lots, (the other nine having been sold the present Season) in that most advantageous mercantile situation known as "SUMMER HILL," adjoining MONTAGUE BRIDGE, ten miles from Georgetown, where close to 150,000 bushels of Produce are annually shipped, and nearly all paid for in Cash: Americans and other speculators purchase here and ship for Great Britain, the United States, &c.

A number of Stores, Wharfs, a Meeting House, Post Office, and Temperance Society have been established for some time; with many Grist and Saw and Cloth Mills in the vicinity; where also any quantity of all kinds lumber can be had in trade at low rates. "SUMMER HILL is" the only *Freehold Property* for sale in the place which renders it most desirable for the above class of artizans now so much wanted in this rising town.

A STORE and DWELLING on it, capable of holding 15,000 bushels produce, with a double Wharf and site for a Lime Kiln, will be sold or leased on reasonable terms.

Plans, particulars or any other information can be obtained by calling at the office of Messrs. BALL & SON, Land Surveyors, Charlottetown. Reference can also be had from W. SANDERSON, F. P. NORTON, THOS. ANNEAR, Georgetown; JAS. BRODERICK, Campbelton, Lot 4; F. W. HUGHES, *Examiner* Office, Charlottetown, and to the subscriber at Orwell, who is also Agent for the sale of **Manny's Mowing Machine**, the celebrated Yarmouth COOKING STOVE, and also for the Fulling Mills of Messrs. BOURKE, Mill View, the Honble. Jas. MCLAREN, New Perth, FINLAY W. MCDONALD, Pinette; where CLOTH is received and returned with despatch.

RICHARD J. CLARKE.

Orwell Store, Aug. 10, 1864. E I

KENT STREET
TAILORING ESTABLISHMENT
—AND—
CLOTHING STORE.

THE Subscriber begs to call the attention of MECHANICS and others to a supply of

Sleeved VESTS

which he offers for Sale very cheap. They are a most useful and comfortable article, particularly in the winter season, but at all times serviceable in preserving underclothing and keeping it clean.

ALSO, — Black and grey HOMESPUN PANTS, which will be sold on most reasonable rates for CASH.

P. REILLY,
Kent Street, next to "Herald" Office.

Charlottetown, November 2, 1864.

AUGUSTUS HERMANS,
Locksmith, Gunsmith and Bell Hanger,
COPPER, SHEET IRON, ZINC & TIN PLATE
WORKER,
QUEEN STREET, - - - - - - CHARLOTTETOWN.

☞ TIN and ZINC WATER SPOUTS, STOVE PIPES, and TIN WARE, constantly on hand.

Stoves fitted up and repaired.

∗∗ All orders promptly attended to.

Oct. 17, 1862.

CITY TANNERY.

Notice to the Public!

THE SUBSCRIBER will pay at the Office of the CITY TANNERY,

Four Pence Half-penny

Per pound, CASH, for any quantity of OX and COW HIDES, and market prices for Sheepskins, as quoted in *Ross's Weekly*.

Agents throughout the Island will be guided as to price to be paid for the sheep skins by the *Weekly*, and 4½d. per pound for Hides.

AGENTS:

Messrs. William Sanderson, Georgetown,
Manoah Rowe, Montague Bridge,
James Hayden, Vernon River,
John Cornish, Wood Islands,
Edward Robertson, Newtown, Belfast,
Richard Habit, Summerside,
Charles Compton, St. Eleanor's,
John Beer, Centreville, Bedeque,
R. Tuplin, Jr., Margate,
Samuel Prowse, Murray Harbor,
James Clow, do
John Knight, Souris,
Donald Beaton, do
Robert Howlett, Grand River, Lot 56,
William Findlay, Orwell,
James Moore, Flat River,
J B Gay, Pownal,
J R McEwen, West St Peter's
John Sutherland, St Peter's Bay,
D H Dingwell, Rollo Bay,
John Carter, Tignish,
John Cahill, Campbelton Lot 4,
J Connors, Lot 14.

W B DAWSON.

Charlottetown, Sept. 7, 1864. 3w

A CARD.

THE Subscriber having for the last four months, been engaged in making large and important additions to his Factory, the CITY TANNERY, and which are now on the eve of completion, he deems the occasion to be one on which it most certainly behoves him to make some manifestation of the very grateful estimation in which he holds the liberal patronage which, for a period of six years—the time which has elapsed since he established his Factory—has been extended to him by his numerous friends in Town and Country; and which has not only incited him to the extension and improvement of his premises for manufacturing purposes, but also enabled him to meet the very heavy outlay thereby incurred.

To those friends, therefore, he now begs leave to tender his sincere and grateful acknowledgments for the very large amount of patronage for which he is already indebted to them; not doubting that his future endeavors, ON A MORE EXTENDED SCALE, to supply them on the most reasonable terms, with the very best articles in his line, will, on their part, be met by a corresponding appreciation and encouragement of his enterprise.

The additions which he has made to his Factory, and the improvements which he has effected therein, are such as will enable him in future to manufacture about

3,000 Sides of SOLE LEATHER,

a Year, besides his former usual quantity of UPPER LEATHER: and having, besides, succeeded in obtaining the services of an experienced

First Class Sole Leather Tanner,

from the United States, he confidently trusts that he shall have it in his power to offer to an appreciative public an article of SOLE LEATHER superior to any previously manufactured in the country, and fully equal to any imported.

W. B. DAWSON.

Sept. 21, 1864. 8i

GEORGE McDONALD, Tailor,

BEGS leave to inform his numerous friends and customers that he has removed his place of business from North side Queen's Square, to Weymouth Street, opposite the Convent, where he hopes to meet with a share of public patronage, and is prepared to receive all kinds of work, and to cut all styles of garments at the shortest notice and moderate prices.

Charlottetown, June 29, 1864. tf

NOTICE.

THE Co-partnership existing between the Subscribers, under the name and Firm of DELANY & WILSON, having been dissolved on the 20th September last, all parties indebted to the late Firm are hereby requested to make immediate payment to D. O'M. & R. REDDIN, Attorneys, at their Office in Dorchester Street.

THOMAS DELANY,
WILLIAM H. WILSON.

Charlottetown, October 5, 1864.

WILLIAM H. BREMNER,
PRINTER AND BOOKBINDER,
KENT STREET,
(TWO DOORS WEST OF STEWART'S HOTEL,)
Charlottetown, - - - - - - - P. E. Island

Books can be left for Binding at Mr. JOSEPH BERTRAM'S, Summerside.

Charlottetown, Sept. 21, 1864. 6in
