Transactions of the Wisconsin State Agricultural Society, with portions of the correspondence of the secretary. Vol. II 1852

Wisconsin State Agricultural Society
Madison, Wisconsin: Beriah Brown, State Printer, 1852

https://digital.library.wisc.edu/1711.dl/7QVFZW54MPAZM83

LITH. OF ENDICOTT & Co N.Y.

BISHOP, DEVON BULL,

Six years old, the property of A.P. LYMAN ESQ^R. of Sheboygan, winner of the First Prize at Milwaukee 1852.

ACA 2214

TRANSACTIONS

OF THE

WISCONSIN STATE AGRICULTURAL SOCIETY,

WITH PORTIONS

OF THE

CORRESPONDENCE OF THE SECRETARY.

VOLUME II.—1852.

MADISON:
BERIAH BROWN, STATE PRINTER.
1853.

ADVERTISEMENT.

In presenting to the Farmers of Wisconsin, the Second Volume of the Transactions of the Wisconsin State Agricultural Society, the undersigned, for his Associates in the Executive Committee, and in his own behalf, would most respectfully tender to them warm and sincere thanks for the favorable reception accorded to the First Volume.

The present Volume, it is hoped, will not be deemed unworthy of its predecessor, nor yet of the more advanced age of the Society. In its preparation it has been the aim of the Executive Committee to present such papers as would, if duly considered, be found of use and practical benefit to the Farmer.

If they have succeeded in this, and if the present Volume should be found worthy of the attention of those interested in Agricultural advancement, then are their labors fully rewarded.

To those gentlemen who have so kindly assisted the undersigned in the preparation of this Volume, by responding to the calls made upon them, he returns his grateful thanks, and as the only return he can make, he gives them the assurance that his best exertions shall be given to the Society with which he is connected, and to the cause of Improvement which it is striving to advance.

ALBERT C. INGHAM.

State Agricultural Rooms,
Madison, January, 1853.

CONTENTS.

V.

VI.

VII.

VIII.

IX.

OFFICERS

OF

THE WISCONSIN STATE AGRICULTURAL SOCIETY

FOR 1852.

PRESIDENT.

HENRY M. BILLINGS, Highland.

VICE PRESIDENTS.

MARTIN WEBSTER, Fox Lake. NATHANIEL B. CLAPP, Kenosha.
ORRIN DENSMORE, Emerald Grove.

RECORDING AND CORRESPONDING SECRETARY.

ALBERT C. INGHAM, Madison.

TREASURER.

SIMEON MILLS, Madison.

ADDITIONAL MEMBERS OF THE EXECUTIVE COMMITTEE.

WARREN CHASE, Fond du Lac. H. B. HAWLEY, Milford.
ELIAB B. DEAN, Jr., Madison. SAMUEL S. DAGGETT, Milwaukee.
JACOB D. MERRITT, Grant.

State Agricultural Rooms, Capitol, Madison.

LIFE MEMBERS, 1852.

ERASTUS W. DRURY, Fond du Lac.

HARVEY DURKEE, Kenosha.

ANDREW E. ELMORE, Mukwonego.

ERASTUS FAIRBANKS, St. Johnsbury, Vt.

LEONARD J. FARWELL, Madison.

BENJAMIN FERGUSON, Fox Lake.

MARTIN FIELD, Mukwonego.

ALBERT C. INGHAM, Madison.

SIMEON MILLS, Madison.

ALEXANDER MITCHELL, Milwaukee.

JAMES H. ROGERS, Milwaukee.

MARTIN WEBSTER, Fox Lake.

LIBRARY ADDITIONS, 1852.

Colman's Agricultural Tour, 2 vols.

Stephens' Book of the Farm, 2 vols.

Youatt and Martin on Cattle. Stevens.

Structure and Diseases of the Horse. Youatt.

Breeds, Management and Diseases of Sheep. Youatt.

The Pig. Youatt.

Agricultural Chemistry. Johnston.

Lectures on Practical Agriculture. Johnston.

Elements of Scientific Agriculture. Norton.

The Farmer's Companion. Buel.

Farmer's Encyclopedia. Blake.

Complete Farmer and Gardener. Fessenden.

American Muck Book. Browne.

American Farm Book. Allen.

American Poultry Yard. Browne.

Domestic Animals. Allen.

Cottage and Farm Bee Keeper.

Fruit and Fruit Trees of America. Downing.

American Fruit Culturist. Thomas.

The Fruit Garden. Barry.

Rural Architecture. Allen.

The Farmer's Magazine. (London.)

Journal of Agriculture. (Edinburgh.)

The Wool Grower. (Rochester.)

DONATIONS.

Hon. Allen W. Dodge, Hamilton, Mass. Transactions of the Essex Agricultural Society for the years 1818, 1820, 1822, 1830, 1831, 1832, 1833, 1834, 1835, 1839, 1840, 1841, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850 and 1851. Also, Transactions of the Massachusetts Agricultural Societies for the years 1845, 1846, 1847, 1848, 1849 and 1850.

Gen. William Sutton, Danvers, Mass. Transactions of the Essex Agricultural Society for the years 1826 and 1842.

Joseph N. Saunderson, Esq., Lynn, Mass. Transactions of the Essex Agricultural Society for 1851.

Hon. John W. Proctor, Danvers, Mass. Proceedings of the Massachusetts Board of Agriculture for the years 1851 and 1852. Also, Transactions of the Massachusetts Agricultural Societies for 1851.

Hon. Thomas Ewbank, Washington, D. C. Patent Office Report for the year 1850, Agricultural and Mechanical. 2 vols.

Hon. James Duane Doty, Washington, D. C. Patent Office Report for 1850, Agricultural.

Girard Richardson, Esq., Madison. Patent Office Report for 1850, Agricultural and Mechanical. 2 vols.

Gen. George P. Delaplaine, Madison. Patent Office Reports for 1847, 1848 and 1849. 4 vols.

Prof. Joseph Henry, Washington, D. C. Prof. Espy's Theory.

Rev. Charles Lord, Secretary, Madison. Addresses of Hon. Morgan L. Martin and Gen. William R. Smith before the State Historical Society.

John Warren Hunt, M. D., Madison. Davis's Text Book on Agriculture.

Prof. William W. Mather, Secretary, Columbus, Ohio. Reports of the Ohio State Board of Agriculture for 1846, 1847, 1848, 1849, 1850. 2 vols.

Hon. Levi Colvin, Cato, N. Y. Transactions of the American Institute for 1850. Also, Transactions of the New York State Agricultural Society for 1850.

John C. Holmes, Esq., Secretary, Detroit, Mich. Transactions of the Michigan State Agricultural Society for 1849, 1850 and 1851. 3 vols.

Hon. B. P. Johnson, Secretary, Albany, N. Y. Transactions of the New York State Agricultural Society for 1851.

His Exc. Joseph A. Wright, President, Indianapolis, Ind. Report of the Indiana State Board of Agriculture for 1852. 50 copies.

Hon. Simeon Mills, Madison. Western Portraiture, D. S. Curtis.

Frederick McCready, Esq., N. Y. City. The Working Farmer, 1852.

Daniel Lee, M. D., Rochester, N. Y. The Genesee Farmer, 1852.

D. D. T. Moore, Esq., Rochester, N. Y. Rural New Yorker, 1852.

Warren Isham, Esq., Detroit, Mich. Michigan Farmer, 1852.

John S. Wright, Esq., Chicago, Ill. Prairie Farmer, 1852.

Mark Miller, Esq., Janesville. Wisconsin Farmer, 1852.

Prof. Geo. Buckland, Toronto, C. W. Canadian Agriculturist, 1852.

J. S. Warder, M. D., Cincinnati, Ohio. Western Horticultural Review, 1852.

B. P. Johnson, Esq., Albany, N. Y. Journal of the New York State Agricultural Society, 1852.

John Faville, M. D., Madison. The Home Journal, 1851, 1852.

Alden & Holt, Janesville. Janesville Gazette, 1852.

Robinson & Brother, Green Bay. Green Bay Advocate, 1852.

Royal Buck, Fond du Lac. Fountain City Herald, 1852.

Bird & Vail, Ozaukee. Washington County Blade, 1852.

Rufus King & Co., Milwaukee. Daily Sentinel, 1852.

William E. Cramer, Milwaukee. Daily Wisconsin, 1852.

S. M. Booth, Milwaukee. Daily Free Democrat, 1852.

David Atwood, Madison. Daily State Journal, 1852.

LETTER

From the Corresponding Secretary of the State Agricultural Society.

STATE AGRICULTURAL ROOMS
MADISON, January 24th, 1853.

To His Excellency Leonard J. Farwell,
Governor, &c.

Sir—In accordance with the requirements of an Act entitled "An Act for the Encouragement of Agriculture and its kindred Arts in this State," approved April 17th, 1852, I have the honor herewith to transmit the Second Annual Report of the Wisconsin State Agricultural Society.

Very respectfully,
Your obedient Servant,
ALBERT C. INGHAM,
Corresponding Secretary.

LEGISLATIVE.

STATE OF WISCONSIN,
In Senate, January 25th, 1853.

A Message from His Excellency the Governor was announced, which being received from the hands of his Private Secretary, Harlow S. Orton, Esq., was read as follows, to wit:

EXECUTIVE DEPARTMENT,
Madison, January 25th, 1853.

To the Senate:

I have the honor herewith to transmit to you the Report of the Wisconsin State Agricultural Society for the year ending December 31st, 1852.

LEONARD J. FARWELL.

Whereupon the said Message and accompanying documents were referred to the Committee on Agriculture.

STATE OF WISCONSIN,
IN SENATE, March 7th, 1853.

RESOLVED BY THE SENATE, (the Assembly concurring)—That the State Printer be directed to publish twenty five hundred copies of the Transactions of the Wisconsin State Agricultural Society for 1852, to be printed under the direction of the Secretary of the Society, of which five hundred copies shall be for the use of the Members of the Legislature, and the remainder for the Society; said books to be bound in muslin, with lettered backs, to match the first Volume of Transactions of said Society, provided said books do not exceed in cost the sum of seventy five cents per volume.

(Attest) JOHN K. WILLIAMS,
Chief Clerk of the Senate.

STATE OF WISCONSIN,
IN ASSEMBLY, March 8th, 1853.

The above and foregoing Resolution was concurred in by the Assembly.

(Attest) THOMAS McHUGH,
Chief Clerk of the Assembly.

TRANSACTIONS.

TRANSACTIONS

OF THE

WISCONSIN STATE AGRICULTURAL SOCIETY.

REPORT OF THE EXECUTIVE COMMITTEE FOR 1852.

To the Legislature of the State of Wisconsin:

The Executive Committee of the Wisconsin State Agricultural Society, pursuant to the requirements of the "Act for the encouragement of Agriculture and its kindred Arts in this State," would respectfully report:

That the various operations of the State and of the County Agricultural Societies, during the year just closed, have been in the highest degree gratifying, while the great and increasing interest which has been so generally manifested throughout the State in these operations, gives encouraging assurance that the labor will not be in vain, but that the spirit of agricultural inquiry which has been awakened, will incite the farmer to increased attention to the details of farm management, and to the proper adaptation of his crops to the soils, so as to secure the largest returns with the greatest permanent economy.

Hitherto the progress, in this State, of improvement in Agricultural Science has been slow, and has not kept pace with that rapid developement which has, in other respects, been the pre-eminent characteristic of Wisconsin. In part, this may be ascribed to the adverse circumstances which, almost of necessity, surround the early settler in all new countries; but another great cause may be found in our fertile soil and genial clime. The hardy pioneer, in search of a home for himself and for his family, sees in Wisconsin, spread out before him by the bountiful hand of Providence, a virgin soil, rich in all agricultural resources—yielding plenteous returns with but little expenditure of toil and labor, and requiring no great exertion or care. Habits of neglect and inattention are thus formed—and not because the husbandman is wanting in energy, skill, and enterprise, for by no people are these qualities possessed in a greater degree than by our own.

To arouse the farmer from this condition,—to awaken in him a spirit of agricultural inquiry,—and to disseminate, as far as possible, practical and useful information upon kindred subjects, have been the special objects had in view, during the past year, by the Executive Committee.

In the beginning of the year, much embarrassment was experienced by the Executive Committee from the want of suitable and commodious rooms for the meetings of the Society and of the Committee, and for the proper arrangement of the books and agricultural papers, the grains, seeds, wools, and implements which the Society had already commenced collecting, and which, were proper facilities afforded for preservation and arrangement, would, without doubt, soon be largely increased. Acting, as the Society does, gratuitously, laboring for the advancement of the greatest of our industrial interests, and with the whole State as a field for its labors, it was thought that the public authorities would, without hesitation, grant the use of such accommodations as might be necessary. With this view, application was made to His Excellency the Governor, who promptly placed at the disposal of the Society the rooms which it is now occupying in the Capitol. These have been fitted up in a manner suitable to the wants of the Society, and the care and management of them assigned to the Corresponding Secretary.

The Library and Museum of the Society have received from the Committee such attention as the circumstances of the Society would allow, and which, though entirely inadequate, has yet furnished a foundation upon which a noble superstructure may, in a few years, be reared.

The correspondence of the Society, which, even during the first year of its labors, had become quite extended and valuable, has, during the past year, under the management of the proper officer, been largely increased. Many new and valuable correspondents have been added to the Society's lists, and the results cannot but prove of value. In compliance with the provisions of the law under which this report is submitted, a special direction has been given to one branch of this part of the labors of the Society, the results of which may in part be seen from the accompanying papers.

The Finances of the Society are in a sound condition, as will be seen by the accompanying Report of the Treasurer. The receipts of the year, amounting to $2,748 45, exhibit a gratifying increase over those of the former year, and have enabled the Executive Committee to put into execution the recommendation of their predecessors, by largely increasing the List of Premiums to be awarded at the Annual Fair. The expenditures of the year, aside from the Premium List, have been such only as were demanded by the most urgent wants of the Society, while it has been the constant desire and aim of the Committee to exercise the most rigid economy and prudence in all of the financial operations of the Society. The balance in the Treasury, of about $80, will show that in this desire they have been successful.

In the arrangement of the Premium List for the Annual Fair, it was the aim of the Executive Committee to bestow such gratuities alone as promised the greatest good, and which would contribute most to the speedy advancement of the industrial interests of the State. Hence, a large portion was made payable in agricultural books of approved value and merit; as, by the distribution of these, it was thought that much information of great and practical value would be disseminated, which otherwise might not for a long time, if ever, be obtained. To those whose articles and animals evinced superior and marked excellence, the diploma and medals of the Society were sparingly bestowed. These, being permanent testimonials, and being given as the highest honors of the Society to those whose exhibitions showed exertion and research, upon the various subjects upon which they competed for premiums, it was thought, would be esteemed and valued more highly than any other award that could be made. In the award, whenever it was practicable, statements were required from the competitors, showing what was peculiar in the management of the crop, in the fabrication of the article, or in the mode of keeping and feeding the animal. These will appear in the accompanying papers.

Premiums

The Second Annual Cattle Show and Fair of the Society was held at the Cold Spring Race Course, in the immediate vicinity of the city of

Milwaukee, on the 6th, 7th, and 8th days of October, 1852. The grounds selected for the purpose were enclosed by a high board fence, the space within affording ample room for the arrangement and display of the articles, and the accommodation of the throngs of visitors. Within the track, which followed the fence for the most of the distance round, was a broad, open space, somewhat undulating in surface, but with sufficient level ground for the purposes required. The main entrances were on the northern side; and nearly fronting them, at perhaps one hundred yards distance, were several large tents, gaily decorated with streamers, for the reception and exhibition of Domestic Manufactures, Dairy and Farm Products, Fruits, Flowers, Paintings, &c. Between these tents, and the track to the west and south, were arranged the various pens for the show of Cattle, Sheep and Swine; and at the extremity of the line, were a collection of enclosures for Poultry. In a fine grove, still farther to the south, were several tents and sheds, neatly fitted up, and provided with refreshments. Towards the eastern side of the enclosure, rows of posts were placed, to which horses could be fastened. A sufficiently large space still remained unoccupied, which was appropriated to the exhibition and trial of Agricultural Implements and various Machinery, and to the Plowing Match. On two sides of the enclosure, a fine wood, glowing with brilliant autumnal tints, gave variety and beauty to the landscape. Open fields smiled on the eastern, while the avenues of approach were on the western front. The enterprising owner of the grounds, Dr. E. B. Wolcott, had spared neither pains nor expense in putting them in the best order, and it would be difficult to find, within the limits of our State, a finer field for an Agricultural Exhibition than the Cold Spring Course afforded.

The weather was propitious, and at an early hour of the first day, crowds of exhibitors were flocking to the Fair Grounds with their various entries. The list was very large—nearly thrice that at the First State Fair during the year previous—and in many of the departments, the competition was as spirited as the entries were numerous. In consequence of the non-attendance of many of those selected to act as judges in the award of premiums, some delay and difficulty was experienced in filling up the Committees. The arrangements, too, for the reception and exhibition of some of the articles were unavoidably delayed. Nevertheless, in spite of these lets and hindrances, the Exhibition gradually took form and shape, the Committees assembled and made their examinations, and by the morning of Thursday, the Fair was formally opened to the public.

Notwithstanding the appearance of the weather, which was rather unfavorable, the rush of visitors was very great, upwards of twelve thousand persons, as was estimated, having passed into the enclosure during the day. This number was largely increased on the day following, Friday, although the clouds looked threatening, and rain fell at intervals during most of the afternoon. On the morning of Friday, the Annual Plowing Match came off, and was closely contested. In the afternoon of that day, the Annual Address was delivered by Judge HUBBELL before the Society and an immense concourse of people. The Military and Fire Departments of Milwaukee, in full uniform, and with their entire apparatus, came upon the ground just before the delivery of the Address, and won high encomiums from the multitude present by their thorough discipline and handsome display. After the delivery of the Address, the awards of the several Committees were announced by the Secretary, and the main business of the Fair was over. It had been designed to hold a public auction sale of stock, machinery, farm and dairy produce, &c., on the Fair Grounds on Saturday morning. But the heavy rains which set in on Friday night, and continued throughout the whole of Saturday, mainly defeated this project.

Taken as a whole the Fair was eminently successful. The entries were very numerous, and the exhibition in several departments was unexpectedly fine. The show of Cattle and Sheep was good, and of Horses superior. The number of visitors in attendance outran the expectations of the most sanguine. The proximity of a large city, and the facilities by steamboat, railroad, and plank-road, of getting to the Fair, accounts in part for the large gathering. Another reason for it may be found, it is hoped, in the growing pride which the people of Wisconsin take in these Annual Exhibitions, and the interest that all classes feel in contributing to the developement of the agricultural resources of our State. Many of the arrangements for the Fair were found insufficient, as was to be expected, in an undertaking so new to our people. The selection of the Committees, to judge of the merits of the different articles exhibited, is a matter of great consequence, not only to a fair adjudication, but for the satisfaction of the various competitors. Great care was taken in the original selection of these Committees, as announced some months previous to the holding of the Fair, but from one cause or other, many of the members so selected were not present on the first day of the Fair, and the places thus left vacant had to be filled on short notice, and by a hurried selection from among the persons in attendance. This was much to be regretted.

A complete list of the premiums awarded, will be found among the accompanying papers.

There was a large share of Agricultural Implements upon the ground, all of neat pattern and most excellent workmanship. *Atkins' Automaton Reaper and Raker*, entered by JOHN S. WRIGHT, Esq., of the Prairie Farmer, Chicago, was decidedly the most ingenious piece of mechanism on the ground. This machine cuts the grain, rakes it into bundles, and deposits these, as it passes along, upon the ground ready for the binder. The performance of the Raker was especially curious, imitating exactly the motions of the human arm, with the advantage of never tiring out. This machine excited great curiosity, and received particular attention from the farmers in attendance. We see no reason why it should not prove a valuable addition to the stock of labor-saving Agricultural Implements.

In many departments, the show of Stock was large and fine. Commencing with Horses, the display was highly creditable, there being no less than ninety-two entries under the head of Stallions, Brood Mares and Colts—all of good stock, and many of them remarkably fine animals. In this department, as also in that of Matched and Draft Horses, the show was more than could have been expected, and all that could have been wished. Of Cattle, there was a very fine, though not a very large exhibition. Of Swine, the show was small, considering how important an article Pork has become to the farmers. Of Sheep, the display was large, and the quality of the Stock exhibited superior. The improvement in this particular department of Wisconsin farming within the past two or three years, has been as marked as it is gratifying. The experience of five or six years has established, beyond all dispute, the fact that the soil and climate of our State are admirably adapted to the raising of Sheep, and that no pursuit of agricultural industry yields the farmer a more certain or more substantial return. Every one interested in the growth and prosperity of Wisconsin, must have noticed with pride and pleasure the very fine show of Sheep at the State Fair. Of Poultry, there was an unexpectedly good display. Specimens, and fine ones too, were exhibited of all the fashionable, as well as the common varieties. Dorkings, Chittagongs, Shangais and Polands, were each represented. There were, too, some indisputably good samples of Turkeys, Guinea Fowls, and Muscovy Ducks.

The show in the Dairy Department was small, but of excellent quality. Some cheeses were shown which rivalled the best New York and Ohio samples, and a few lots of sweet and golden butter elicited general praise. The high price which cheese and butter have borne during the past autumn, and the probability that with the extending lines of railroad and the constantly increasing rapidity and frequency of communication between the eastern market and the western producers, these prices will be maintained, must lend increased activity and importance to this branch of agricultural industry. Nor can there be any reason to doubt, that with such good and abundant pasturage as Wisconsin affords, our farmers, with proper care and labor, can compete successfully with their eastern brethren in the production of butter and cheese.

The samples of Wheat, Indian Corn, Oats, Barley, Flax-seed, and Vegetables were numerous and excellent. In this department the exhibition was highly satisfactory. The Hutchinson and Blue Stem varieties of Winter Wheat, and the Canada Club Spring Wheat, were the favorite ones, and the specimens exhibited vindicated the claim of Wisconsin to the first rank among the wheat-growing States.

In the Department of Fruits and Flowers, there was an abundance to gratify the taste and delight the eye. The show of Fruit was unexpectedly large, and the quality and variety alike remarkable. It was gratifying to find that so much attention had already been paid by our Wisconsin farmers to the culture of Fruit, and that the money and labor bestowed upon it seemed to have been wisely and profitably invested. There was a numerous exhibition of Flowers, and many of the Floral designs and boquets were arranged with exquisite taste.

In the Miscellaneous Department of the exhibition, the show was very creditable. Many of the mechanics of Milwaukee improved the opportunity of exhibiting specimens of their skill and handiwork. In a report like this, it would be impossible to mention by name even a tithe of the exhibitors, or of the articles displayed. We must therefore content ourselves with the general remark, that the State Fair afforded most convincing and gratifying proof that, in all the useful arts and leading branches of manufacture, our young State has already attained a respectable rank, and that she can count among her citizens, mechanics as ingenious and skilful as any to be found in the older eastern communities.

Having thus, in accordance with the law, given a brief sketch of their own proceedings during the past year, the Executive Committee, in conclusion, would urge upon the Legislature the importance of encouraging, by every suitable means, the improvement of the great and paramount interest of Agriculture. To this, the leading interest in Wisconsin, and the true basis of all State and National wealth, it is eminently proper and fitting that the representatives of the people should freely extend the fostering hand, and by wise and judicious patronage aid to place it in its proper position.

Our soil is pre-eminently adapted to all the purposes of the Agriculturist, but by careless and injudicious cultivation, its virgin strength must soon become exhausted. To prevent this disastrous result, by spreading abroad among our citizens a knowledge of Agricultural Science, and the results of Agricultural research, is the special duty of the State Agricultural Society. In the discharge of this duty, it needs the aid and countenance of every good citizen, and of every one interested in the well being of Wisconsin.

In resigning their trust into the hands of their successors, the members of the Executive Committee enjoy a satisfaction in feeling that in all their labors and efforts they have been actuated by a sincere and honest desire for the advancement of the Society, and the great interests which it has in charge; and though they may not have accomplished all that could have been desired, they trust that it will be found that in none of their decisions have they greatly erred.

On behalf of the Executive Committee,

Respectfully submitted,

ALBERT C. INGHAM,

Corresponding Secretary.

ANNUAL ADDRESS.

The Society was called to order by the President, Hon. Henry M. Billings, at three o'clock, P. M., of the third day of the Fair; and after a very fervent and impressive prayer had been offered, by the Rev. Wm. H. Spencer, of the Presbyterian Church, Milwaukee, the President addressed the Society in a few brief and appropriate remarks, in concluding which, he congratulated the members upon the favorable circumstances under which they had assembled together, and introduced the Hon. Levi Hubbell to the audience.

ADDRESS BY HON. LEVI HUBBELL.

Mr. President, and Fellow Members of the State Agricultural Society:

The field of your labors is not less favored, in its locality, than rich and varied in its products. Forming the apex between the head waters of the St. Lawrence and the Mississippi, its navigable streams flow alike to the Gulf of Mexico and the Atlantic Ocean. On the north, are boundless forests of pine; on the west, inexhaustible stores of mineral; through the middle and south, fertile prairies and openings; and everywhere, limpid and bounding streams, pure and healthful airs.

To the eye of the stranger, Wisconsin seems the chosen home of Industry, Health, Prosperity, and Peace. Here it would seem that Agriculture, Commerce, and Manufactures might establish themselves, with every element of nature for their helper, and every interest of humanity for their stimulant and guide.

But, gentlemen, though the sun in his circuit, visits no spot of earth lovelier, healthier, or more fertile than our chosen State, I am not here to praise it. I come to speak to you only as working-men, and of your State, as a field of labor. Labor is our common heritage; our blessing as well as our curse. When the fiat of Omnipotence drove man from the garden of Paradise, into a world of thorns and briars, we read that "the *ground* was cursed for his sake," and he was sent forth, "to till the earth from which he was taken." But his case was not left hopeless. Though the flaming sword of cherubim barred him forever "from the tree of life," and "in the sweat of his brow" he was commanded and compelled to "eat his bread," two pitying angels followed his footsteps and cheered his fallen estate. The one was Religion, and the other Art; the one pointed his eye to a better world; the other taught him how to improve and enjoy this. Aided by art, and by mental and physical exertion, man has "taken possession of the earth and subdued it;" he has cleared away the thorns and briars and made "the wilderness bud and blossom as the rose."

Among the ten thousand means which art has devised, for improving the condition of the human family, the enlightened pursuits of Agriculture still remain the most inviting, the most productive, the most noble. The cultivation of the soil still continues the employment of the great mass of mankind; and whatever lightens its burdens or elevates its votaries, must command the ready attention of all right-minded persons.

Invited by the occasion, I shall venture a few remarks, not upon the practical details of agricultural employment, but upon the *qualities and acquirements which should characterize the enlightened American Farmer.*

And, in the first place, allow me to say: The American Farmer should *honor and love his calling.* It was the occupation of primeval innocence. The purest and greatest of men have turned to it, when the world's wealth and honors and stations palled upon their cloyed senses.

Health, strength, competence, and peace attend upon the farmer's toils. The sun and the sky smile directly upon his head. The fruits and the flowers of earth spring beneath his feet, obedient to his call. The free breezes fill his lungs and fan his manly brow. His condition is one of practical independence. He sits beneath his own vine and fig tree. He eats the fruits of his own labor. His wealth and his honors depend not upon the smiles of princes or the favor of the populace, but upon his own right arm, and the blessing of that God who has set his bow in the Heavens, as a witness that summer and winter, seed-time and harvest shall not fail. No man prospers long who is ashamed of his occupation. His intellect flags, his hand refuses to do his bidding. Lost to self respect, he feels that the scorn of the world is upon him. Poverty waits at his door, and despondency sits upon his brow. If such a man be dignified by the name of farmer, what can you expect from him? Though he put his hand to the plow, his own shadow will cause him to faint in the furrow. Pride, emulation, conscious rectitude, honorable ambition, are requisite to great and successful efforts, alike in the field and the workshop, at the merchant's desk and in the halls of legislation. Our agricultural population can never be what they ought to be, until every man walks abroad, not only in the dignity of his own nature, but in the just pride of his own calling; until every man feels that a farm, worked by his own hands, is better than a patent of nobility; that a family clothed in articles of their own manufacture, is more respectable than if the jeweled gifts of Princes hung upon their necks, or glistened upon their idle fingers. Let the farmer understand, that in this country, we have no vagabond race of gentlemen, heirs to idleness and successors to pomp, luxury, and vice; no lineal aristocracy, absorbing the dignity, the honor and the power of all other classes, and yet contributing nothing to the products of the earth or the common good of mankind. But let it be known everywhere—known, practised, and felt, that labor is honorable; that idleness is disreputable; that he who eats his bread in the sweat of his brow, not only submits to no servitude, but stands justified before God and man, as fulfilling the law of his existence; as doing that, which if all men would do, earth would be immeasurably relieved of the curse, and its inhabitants made as prosperous, as independent, and as happy as our fallen nature admits. Hence, I say further, that the farmer should be *industrious*. Idleness is the parent of all the vices; industry of nearly all the virtues. I have never known an industrious community that was not prosperous, independent, peaceful, and virtuous. Industry promotes not only the health of the body, but that of the mind and heart. Its achievements are almost inconceivable. The constant dropping of water wears away the massive and solid rock. The continued clicking of a single hammer, worked by a single hand, during the hours of labor in one man's life, would beat into atoms the entire Capitol at Washington. Industry overcomes all obstacles. It circumnavigates the globe; it digs into the bowels of the earth; it scales with ease the frightful precipice; it propels the weary ox, slow-footed and heavy laden, from his home in the east, across the continent, over arid plains and deep marshes, up rocky steeps and snowy mountains, till he descends the western slopes and drinks of those streams "whose foam is amber and whose gravel gold." Industry adorns alike the humble cot and the most costly mansion. It is the magic wand, which, like that of Midas, transmutes all baser metals into gold. Industry works by system. It has a place for everything, and everything in its place. It has a time for everything, and does everything at the proper time. It is not drudgery; it is not servitude; it is cheerful and free. It rises with the lark, when the dew is on the lawn, and begins as merrily the labors of the day. It retires at evening like the setting sun, peaceful and serene, after the accomplishment of its appointed task. Industry is labor, guided by intelligence and prompted by free will. It is a sure staff by which all men may walk, by which the farmer must. The warrior wins glory and renown by a single battle. The merchant fills his coffers by a single venture. The miner, sacrificing health, comfort, and repose, amasses wealth in a few months. But the tiller of the soil, by slower and surer processes, aims to better his condition. His labors distribute themselves throughout the year. He lives and enjoys himself as he goes along. His hope and expectation is, to make the years' ends a little more than meet, to find his farm improved in condition, his stock enhanced in number and quality, his house better furnished, his family better clad, his debts, if he has any, somewhat reduced, and perhaps, his capital at interest a trifle augmented. He ventures cautiously, manages economically, accumulates gradually. To such a man, industry is the very handmaid of prosperity. Though the seasons may be backward—though wet and drought may impair his crops—though disease may infest his cattle—though the rust may blight his harvest—though prices may be low and the market dull—still industry cheers him on—"Sovereign o'er transmuted ills;" still his course, guided by her, is forward and upward, and he carries the whole circle of the virtues with him.

The farmers should also be skilful. The condition of the arts generally, marks the progress of civilized over savage life. As light dawns upon the head and hearts of nations, they advance in Agricultural knowledge, and as this science is cultivated, society uniformly progresses in refinement, intelligence and social elevation. Not many years since, a few implements of agriculture were sent out to a company of Missionaries established among the Hottentots, near the Cape of Good Hope. Permission was obtained from the swarthy king of the tribe to make an exhibition of the working of the Plow—and his majesty, with his royal family and chief officers, consented to be present and witness the spectacle. Arrangements were made accordingly. The novelty of the scene attracted a great crowd of idle and ignorant natives. It was the first time a plow had broken the soil of that ancient realm. One of the Missionaries held the plow, and drove the team after the American fashion;

and as it passed around the first and second time, turning over the earth with an easy and graceful motion, the curiosity and wonder of the monarch was greatly excited. At the third round he pulled off his cap, threw it upon the ground and exclaimed, "that instrument is worth twenty wives." This is the estimate which a king in Africa puts upon a plow: that is the standard by which a man, unacquainted with the plow, measures value. Farmers of Wisconsin! surrounded by wives and daughters whom you honor, love and cherish, you should remember that a woman is nowhere so pure, nowhere so highly estimated, nowhere so nobly influential as in those rural districts where the science of agriculture is most highly and successfully cultivated. The best managed farm is almost sure to display a farm-house equally well managed, and a family circle over which woman presides with equal cheerfulness and grace. There, woman displays, within her proper sphere, all the homely virtues as well as all the social refinements for which God and nature fitted her; there, she presents the happy medium between the vile slavery to which barbarism reduces her, and the imaginary indedendence, after which modern Bloomerism is wildly and vainly striving.

But I was arguing that skill in agricultural science, demanded the attention of the American Farmer. Whatever is worth doing at all, is worth well doing—whatever it is expedient or necessary to do, should be done in the easiest, quickest and most efficient manner. As labor is the source, or constituent, of all capital, it follows that whatever doubles the product of a day's labor, doubles the capital of the laborer. This principle may be extended and carried out through all the branches of agricultural pursuits. Not only the labor-saving implement or machine practically increases the farmer's capital, but every improvement in seed, in the mode of cultivation, in the time and manner of doing work, and in the adaptation of soils to crops, and crops to soils, must add correspondingly to the product of any given investment. So, also, every improvement in the breeds of cattle, horses, sheep, or other domestic animals, and the modes of rearing, training, keeping and managing them, must cheapen the cost, while it increases the product and adds to the value. It requires no wizard to teach us that the mode of culture adopted now, in this State, is superior to that of the ignorant savages, whose corn hills still dot the surface of the earth in many places around us. Those savages would have been surprised, could some prophet have informed them, one hundred years ago, what a century would exhibit among their planting grounds, in the way of agricultural improvement. So, I fancy would this audience be surprised, could some magic hand cast forward the horoscope, and show to them what improvements, even here, another hundred years are destined to present. The spirit of the age is progress. In every branch of industry, the genius of man is dispelling the darkness of the past, and chaining the elements to his car of triumph. The declaration of the Scripture is being more than fulfilled—not only has man "sought out many inventions," but he is asserting his privilege and prerogative to seek out many more. It is time that the farmer woke up to his duties and his privileges. It is not enough that he is as wise as his fathers were. It is not enough that he watches the changes of the moon and the approaches of the dog star—not enough that he waits for the times and the seasons, and even prays to Him who guides Arcturus with his sons, and binds the sweet influences of Pleiades. He must apply practical science to his daily efforts. He must walk by the lights which modern improvement has spread around him. He must profit by example, by precept, by study and by reflection, or he is not as wise as he ought to be, or as successful as he might be. He must not jog on, in the slow, heavy lumber wagon of past days, or the railroad train of the present will sweep by him, and pass out of sight on the track of progress,

But above all, the *American* Farmer should not slacken his efforts nor abate his desires to acquire skill in all that appertains to his calling. He should remember that agriculture is the great business of the American People; that it is the source of their wealth, and the just object of their pride and glory; that the American people occupy an eminence above the rest of mankind, in liberty and civilization; that the eye of the world is upon us, and the sounding tread of the nations, far down in the depth below, echoes in our ears, warning us to press forward and make room for them.

Again:—The American Farmer should be a *temperate* man. All experience and all history demonstrate that intoxicating drinks add no permanent vigor to the limb, or energy to the intellect. In man and in woman, in youth and in age, in toil and in rest, even their temperate use can only be justified as a doubtful luxury and not as a useful beverage. The mother of Sampson was commanded by an angel from Heaven to "Drink not wine or strong drink."

The Roman Poet, alluding to those who were trained to contend in the Olympic Games, admonishes the emulous youth of his time—

> "Qui studet optatam cursu contingere metam
> Multum tulit fecitque puer, sudavit et alsit
> Abstinuit venere et vino."—

And the great Apostle of the Gentiles, borrowing an illustration from the same subject, appeals to the Corinthians, as knowing, "that every man who striveth for the mastery is *temperate* in all things."

The greatest General of the past age, perhaps the greatest genius of any age, Napoleon Bonaparte, was as temperate in living as he was bold in design, and resistless in execution.

But why appeal to the master-spirits of the world for illustration of a principle, which is as universal in application as it is undeniable in utility. Happily the history of our Agricultural population has exemplified the truth, that the virtues are kindred, and that where prudence, economy and industry prevail, simplicity and purity in habits, and, above all, temperance in the use of intoxicating drinks, has been found to prevail. Our Agricultural communities, generally, have honored and benefitted themselves by their devotion to this cause: and it may well be hoped that the past will be but an incentive to future efforts,—that their practices may diffuse yet richer blessings at home, and command more respect and win more followers abroad.

Still further: The American Farmer should be an *Educated Man.* Knowledge is power the world over. We live in an age signalized by the diffusion of mental light, we live in a country pledged by its institutions, and devoted by its tastes, to make popular education thorough and universal. We live in a State upon which the munificence of the General Government has bestowed the means of educating every man, woman and child. Common school instruction is the birth-right of every son and daughter of Wisconsin. The Pierian Spring bubbles literally at your door-steps, and your children and your childrens' children have but to kneel down and drink of the waters of knowledge. Ignorance among us must be hereafter a disgrace. The *will* only is wanting; the will, on the part of parents, and obedience on the part of children, to make the future population of Wisconsin the most generally, if not the most thoroughly, educated people on earth. And shall that will be wanting? Shall a people who have their destinies in their own hands; with whom rests the sovereign power; who frame and abrogate constitutions; pass and repeal laws; establish and dispense with courts of justice; elevate and displace rulers—shall they refuse to qualify themselves for the proper exercise of those high functions? Above all, shall that portion of the people who numerically control the ballot boxes; whose habits and tastes and avocations best fit them to cherish, and exemplify those purer and sterner virtues out of which our Republican Institutions sprung—shall they, who have emphatically in their hands the hopes and destinies of Freedom, and upon whom Heaven has devolved the high prerogative of rescuing the face of the earth from its primal curse—shall they prove recreant to their position—to their privileges—to the just expectations of the civilized world? The thought is not to be tolerated.

Once more. The American Farmer should be a man of *Taste*. His walks are among the beautiful things of Earth. The gew-gaws of fashion, and the gilded trappings of wealth and power, are but dumb shows, compared with the sights which present themselves to his eye. For him, the limpid brook gurgles over its stony bed, and steals its winding way along the green and flowery mead; for him the tender plant bursts from the nurturing earth—first the blade and then the stalk, and then the full-grown corn in the ear. For him, the forest waves in the summer breeze, turning up the silver sheen of its leaves, in unconscious display of beauty: for him the morning sheds its golden light, sprinkles its pearly dews, and breathes its balmy air.

The very workshop of the Farmer is the temple and palace of Nature; and if his heart is not insensate, if his soul is not blinded or dark, refinement must grow upon him like a habit, and become a part of his nature. It matters not that his employment is laborious and rough; that his attire is plain; that his home is humble. We do not train the soldier in a drawing-room, nor rear the oak in a hot-bed. We do not complain of the pine-apple because its exterior is rough, nor do we relish the crab-apple because its surface is polished. The mind, the heart, and the soul, are the standard and measure of the man; and if the Farmer is not refined and tasteful and elevated, he is impervious to the quickening influences with which a wise and benignant Providence has bountifully surrounded him. And how palpably do these evidences of taste, or the want of it, display themselves throughout every agricultural community. Pass through the State, and mark the farm where the fences are neglected; where briars and weeds grow in the corners and around the stumps; where the cattle stand shelterless in the wind, or feed upon the unfenced stacks of grain; where the dwelling house parches in the sun, without a tree, a vine, or a flower to shelter and adorn it; where old hats and old clothes vie with children's faces in the broken windows, and pigs lounge on the vacant site of the piazza and door steps; and who does not know that, in this place, the man, and what is infinitely worse, the woman, is devoid of taste, and that, wanting taste, they lack all the characteristics of good and successful farmers? I will not detain you by painting the more pleasing antipode of this disagreeable picture, but content myself with hoping that among the wholesome influences of this Society, will be the cultivation of a more elevated taste, and that in a few years, our whole State will be dotted over with tidy and comfortable farm houses, which give evidence not only that prosperity has made them its home, but that taste and refinement there preside, shedding beauty and grace, contentment and joy.

But it is time these desultory remarks were drawn to a close. I beg leave to mingle my regrets with yours, at the misfortune which deprives us of the anticipated speaker on this occasion.* Unexpectedly called, in the midst of pressing engagements, to discharge the honorable duty which has devolved upon me, I feel that I am but standing as an apology for him, whose fame and genius were invoked to lend interest to your Second Annual Meeting. May the anniversaries of your Society be perpetual, and their benign influences become as pervading as they must be useful. The age in which we live is altogether interesting. To the Agriculturist, the signs of the times are animating, encouraging, inspiring. The power of steam has gone far to annihilate space; the electric telegraph outstrips time. The people of the earth are becoming practically but one family, and the nations near neighbors. The great marts of the world are our market-places. Railroads are penetrating the interior of even this State, and bringing into usefulness and value vast tracts of land, recently but the desert home of the savage and the wild beast. The bowels of the earth are yielding up unwonted and unmeasured quantities of the precious metals. All the products of the soil find a ready market and a fair price. Riches are increasing and abounding in the land. Thousands and hundreds of thousands of persons find themselves in easy and affluent circumstances, seeking investment for their capital and occupation for their minds. What more inviting field than that of Agriculture?

* The Hon. William H. Seward was written to, and expected until a late hour, to be present and address the Society.

The time has gone by when it was thought necessary to force a young man into one of the professions to make him respectable. The professions are crowded with those who are fitted to shine in them, and burdened with those who are not. Respectability is confined to no particular class—no profession—no occupation. The industrious, the intelligent, the cultivated, the tasteful, and moral, are everywhere respectable. Why, then, overwhelm the professions with those who must fail to realize their hopes, and rob the field of those who might there be independent, useful and honorable? Let the occupation of the farmer be properly estimated; let it be elevated to the highest ground, and let others look up to it. Tell the ingenuous youth of the country—those who have talent, enterprise, or wealth to employ—here is your appropriate field of exertion; here you may blend taste and beauty with pleasure and profit; here you may have employment that strengthens the body and gratifies the mind; here you may build a home that virtue consecrates, opulence adorns, and hospitality renders attractive; here you will be exempted from the cares and the disappointments that vex the commercial, the professional and the political world; here contentment and peace, like angel's wings, will overshadow your roof; and around the family altar and the family table, gathering the circle of cheerful hearts and cheerful faces, you may eat and drink,

> —— "And in communion sweet,
> Quaff immortality and joy."

ENTRIES AT MILWAUKEE.

CATTLE	65
HORSES	135
SHEEP	331
SWINE AND POULTRY	43
FARMING IMPLEMENTS	109
PLOWING MATCH	6
DAIRY	21
FLOUR AND HONEY	16
GRAINS, SEEDS AND VEGETABLES	131
DOMESTIC MANUFACTURES AND NEEDLE WORK	112
FRUITS	92
FLOWERS	45
PAINTINGS	53
MISCELLANEOUS	170
	1329

WISCONSIN STATE AGRICULTURAL SOCIETY.

REPORTS OF COMMITTEES

Made at the Second Annual Cattle Show and Fair of the Society, held at the City of Milwaukee, on Wednesday, Thursday and Friday, 6th, 7th, and 8th days of October, 1852.

SHORT HORNS.—No. of Entries, 25.

Judges.—Thomas P. Turner, Palmyra; Martin Field, Mukwanego; Hiram Barber, Juneau.

Best bull three years old and over (Henry Clay); Leonard Gage, Hainesville, Ill. Diploma, and Stephens' Book of the Farm.

"Henry Clay is a thorough-bred animal; is red and white; the red more or less mixed with white hairs. He was bred by Horatio N. Cary, of Marcy, Oneida county, N. Y.; was calved, April, 1848. He was sired by the full-bred Durham bull Oregon; Oregon by Cortez; Cortez by Ajax; Cortez's dam, Conquest, by Washington; g. dam, Pansy, by Blaze; g. g. by Charley; g. g. g. Primrose, by Blythe Comet; g. g. g. g. Primrose, by Prince; g. g. g. g. g. Primrose, by Patriot. Ajax sired by Washington; dam Red Lady, by Washington; g. dam Pansy, by Blaze; g. g. Primrose, by Charles; g. g. g. Primrose, by Blythe Comet; g. g. g. g. Primrose, by Prince; g. g. g. g. g. Primrose, by Patriot. Washington and Pansy were imported by Stephen Van Renssellaer, of Albany, and were bred by Mr. Champion, of Engand."

Second best bull three years old and over (Eclipse); Harvey Durkee, Kenosha. $5.

"The bull Eclipse was calved August, 1848; was bred by George Vail, Esq., of Troy, N. Y.; got by his prize bull Meteor, (104 A. H. B.); dam Arabella, bred by Thomas Bates, Esq., England. Arabella was got by fourth Duke of Northumberland, a Dutchess bull, (3649 E. H. B.); her dam by Duke of Cleveland, (1937 E. H. B.); g. dam by Belvidere, (1706 E. H. B.); g. g. dam, a superior short-horned cow, bought by Mr. Bates in 1828, and possessing some of the best blood of the Collins stock."

Best bull two years old and over (Murat); J. Rogers, Burlington. Silver Medal.

Murat is of white color, flecked with roan, and was got by Eclipse, for whose pedigree see above.

Best one year old bull—white; Samuel A. Thurston, Burlington. Youatt on Cattle.

Second best one year old bull (Otsego); A. P. Lyman, Sheboygan. Transactions.

"Otsego is a red bull; calved, May, 1851. He was bred by Francis M. Rotch, Morris, N. Y. Got by Coxcomb; dam Harebell, by Bertram 2d, (3144 E. H. B.); Coxcomb sired by Yorkshireman, (5700 E. H. B.); dam Coral, by Bertram 2d; g. dam, Conquest by Washington, (1566 E. H. B.); Yorkshireman was bred by Mr. Bates, of England—imported by Mr. Cope; sired by Short-tail, (2621 E. H. B.); dam by Belvidere, (1760 E. H. B.)"

Best cow three years old and over (Kate); Harvey Durkee, Kenosha. Diploma, and Stephens' Book of the Farm.

"Kate is red and white; nine years old. Got by Ajax; bred by Gen. Van Renssellaer. Dam by imported Coplow; g. dam by Comet; g. g. dam by Nelson. These bulls were all imported animals."

Second best cow, three years old and over; red, eight years old; A. Blanchard, M. D., Milwaukee. $5.

Best one year old heifer; Adam E. Ray, Troy. Youatt on Cattle.

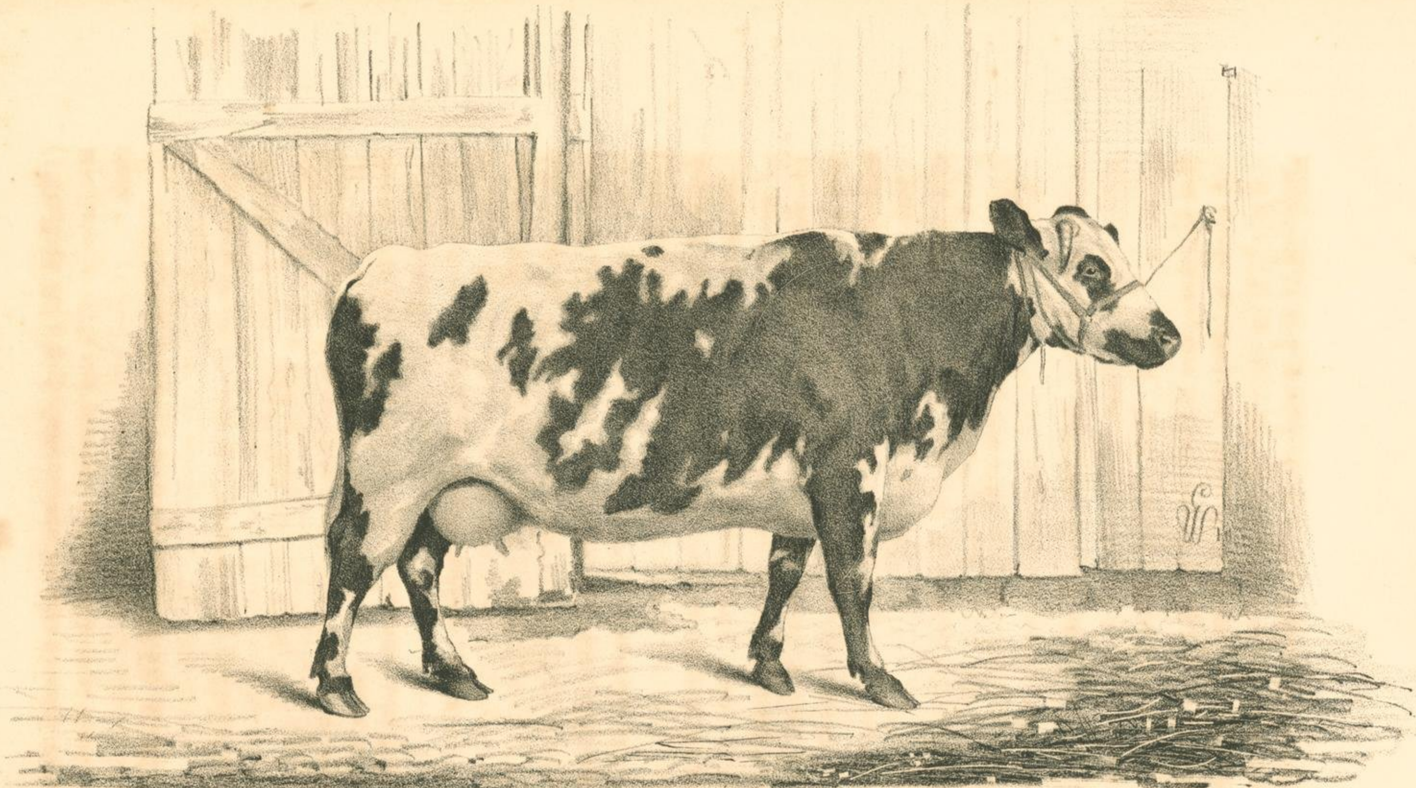
Second best one year old heifer (Rose); L. W. Willan, Pewaukee. Transactions.

DEVONS.—No. of Entries, 3.

Judges.—Leonard Gage, Hainesville, Ill.; H. B. Marsh, Kenosha; H. B. Hawley, Milford.

Best bull three years old and over (Bishop); A. P. Lyman, Sheboygan. Diploma, and Stephen's Book of the Farm.

"Bishop is six years old; is a deep cherry red; was sired by Baltimore. His dam was Frozenfoot, an imported cow."



LITH. OF ENDICOTT & Co. N.Y.

KATE, SHORT HORN COW,

Nine years old, the property of HARVEY DURKEE ESQ[R]. of Kenosha, winner of the First Prize at Milwaukee 1852.

Best two years old bull (Sir Henry); David Hall, Gaines, N. Y. Silver Medal.

Best cow three years old and over (Lucy); A. P. Lyman, Sheboygan. Diploma, and Youatt on Cattle.

The Judges remark, in their report, that while the show in this class was small, yet the animals presented were perfect specimens, and reflect great credit upon their enterprising owners.

NATIVES, AND CROSS BETWEEN NATIVES AND IMPROVED CATTLE.

No. of Entries, 19.

Judges.—Joseph Davenport, Genesee; Elisha W. Edgerton, Summit; Richard Jones, Genesee.

Best two years old bull (Wisconsin Jack); Talbot C. Dousman, Ottawa. Silver Medal.

Second best two years old bull (Bill); red; Benjamin Bettis, Mequon. Youatt on Cattle.

Best one year old bull; red; S. C. Hall, Whitewater. Youatt on Cattle.

Second best one year old bull (Prince Albert); E. F. Weld, Eagle. Transactions.

Best bull calf (Young Herod); speckled; Emery Thayer, East Troy. Transactions.

Second best bull calf; dark red; four months old; Martin Cogswell, Brookfield. Allen's Domestic Animals.

Best cow three years old and over; speckled; four years old; Richardson Houghton, Milwaukee. Diploma, and Stephens' Book of the Farm.

Second best cow three years old and over; George & William McKay, Rockhill.

Best one year old heifer (Kate); red and white; Charles James, Milwaukee. Youatt on Cattle.

Second best one year old heifer; brown; John P. Weaver, Milwaukee. Transactions.

Best heifer calf; red; Beecher & Bryant, Milwaukee. Transactions.

Second best heifer calf; John B. Dousman, Milwaukee. Allen's Domestic Animals.

CROSSED IMPROVED BREEDS.—No. of Entries, 9.

Judges.—Joseph Davenport, Genesee; Elisha W. Edgerton, Summit; Richard Jones, Genesee.

Best bull three years old and over (James Wadsworth); red; five years old; W. S. Skinner, Ela, Ill. Diploma, and Stephens' Book of the Farm.

Second best bull three years old and over (Badger Boy); red; five years old; Hiram Cross, Sugar Creek. $5.

Best two years old bull; red; Durham and Holderness cross; Samuel Hewitt, Rochester. Silver medal.

Second best bull two years old (Nero); Nelson North, Hartford. Youatt on Cattle.

Best cow three years old and over (Korah); Devon and Durham; Beecher & Bryant, Milwaukee. Diploma, and Stephens' Book of the Farm.

WORKING OXEN.—No. of Entries, 9.

Judges.—Joseph Goodrich, Milton; Talbot C. Dousman, Ottawa; Jesse Meacham, Troy.

Best yoke of oxen. Brindle, white faces; seven years old past; George O. Tiffany, Milwaukee. $10.

Second best yoke of oxen. White; nine years old; L. G. Stow, Hartford. $5.

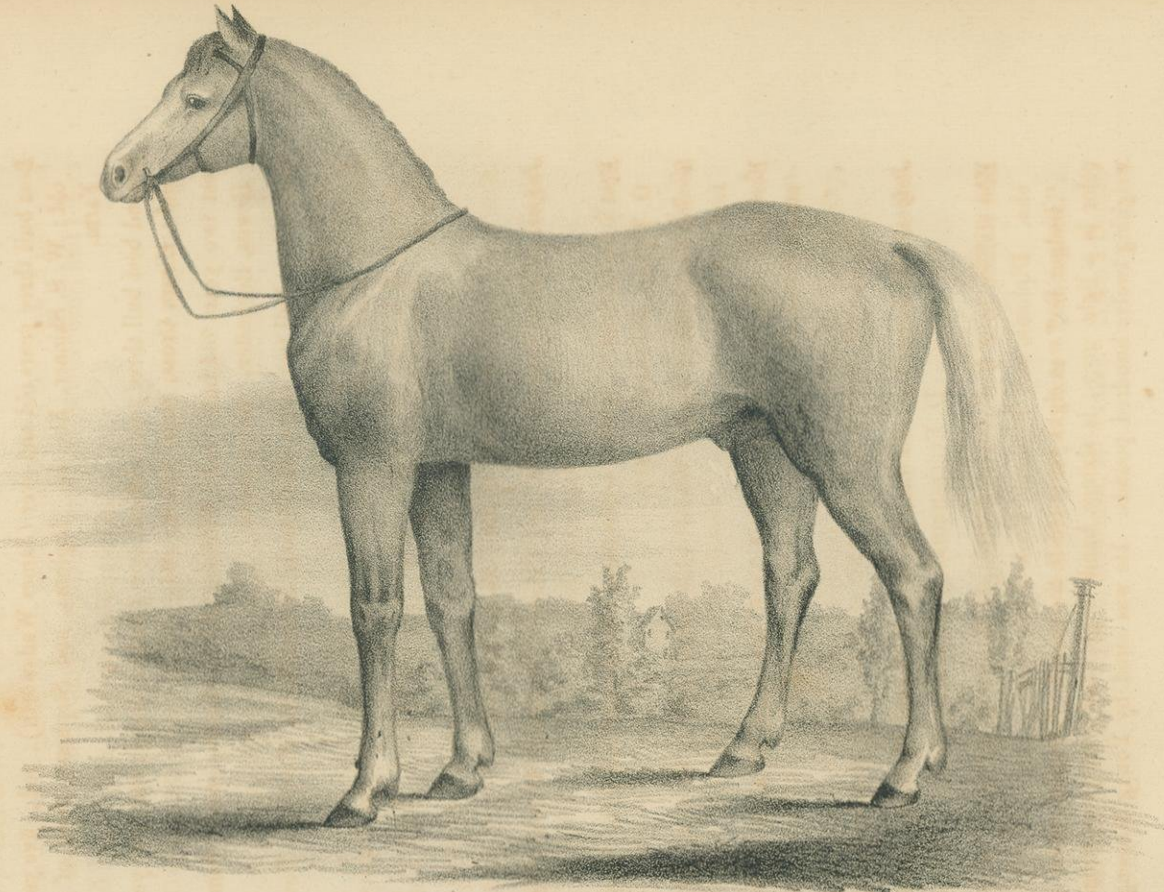
Best yoke of steers, two years old; John B. Dousman, Milwaukee. Youatt on Cattle.

STALLIONS, BROOD MARES, AND COLTS.—No. of Entries, 92.

Judges.—E. Hathaway, Milwaukee; Joel P. Mann, Madison; John L. D. Eyclesheimer, Janesville.

Best stallion over four years old (Badger Boy); A. F. Pratt, Waukesha. Diploma, and Stephens' Book of the Farm.

"Badger Boy was eight years old in the month of August, 1852. His color is a light grey; is sixteen hands high, and well proportioned; weighing twelve hundred pounds. He was sired by Young Messenger,



BADGER BOY,

Gray Stallion eight years old the property of A F PRATT ESQR. of W

whose sire was Ogden Messenger, got by Bush Messenger. Young Messenger's dam was a bay mare, got by Old Eclipse. Badger Boy's dam is Old Whitey. Old Whitey was sired by an imported Norman French horse, owned in Washington county, N. Y. His pedigree and excellent stock are well known."

Second best stallion over four years old (Vermont Morgan); T. J. Wood, Baraboo. $5.

"Vermont Morgan is a dark dapple grey, standing sixteen hands high, and weighing twelve hundred and fifty-nine pounds. He is a thorough-bred Morgan, his pedigree being as follows: Chittenden Morgan; Green Mountain Morgan; Gifford Morgan, by the original Morgan, who was got by True Briton, by Wildair; dam by Sherman Morgan; and g. dam by Gifford Morgan."

Best brood mare over four years old, with foal at her foot, (Kate); five years old; Joseph Davenport, Genesee. Diploma, and Stephens' Book of the Farm.

Second best brood mare over four years old, with foal at her foot, (Old Dolly), eight years old; Jacob Burgitt, East Troy. Youatt on the Horse, and $2.

Best stallion three years old (Young Henry); bay; D. S. Cady, Milwaukee. Silver medal.

Second best stallion three years old (Charles Wisconsin); deep bay; William Vliet, Milwaukee. American Muck Book, and $1.

Best mare three years old (Fanny); sorrel; Garret Vliet, Milwaukee. Silver medal.

Best stallion two years old (Grey Messenger); Elisha Phillips, Kenosha. $5.

Second best stallion two years old (St. Patrick); sorrel; Simon Ruble, Beloit. Youatt on the Horse.

Best mare two years old (Jessie); Enoch Chase, Milwaukee. $5.

Second best mare two years old (Fan); black; Peter D. Wemple, Emerald Grove. Youatt on the Horse.

Best stallion one year old (Patrick Henry); brown; Emery Thayer, East Troy. Youatt on the Horse.

MATCHED AND DRAFT HORSES AND GELDINGS.—No. of Entries, 35.

Judges.—Erastus B. Wolcott, Milwaukee; Geo. C. Pratt, Waukesha.

Best pair of matched horses (Hamiltonian and Messenger); seven years old; brown; George O. Tiffany, Milwaukee. Diploma, and Stephens' Book of the Farm.

Second best pair of matched horses; Addison Baker, Racine. $5.

Best pair of draft horses (Grey Sampson and Windflower); Simon Ruble, Beloit. Diploma.

"Grey Sampson is a dapple grey, five years old, and stands eighteen hands high. He was sired by the celebrated imported draft horse Sampson, who was brought from England to New York, and from thence taken to Ohio. His dam is Canadian Lion, sired by Old Lion, of Pennsylvania. Young Sampson weighs 1783 lbs. when in good order.

"Windflower is a dapple grey, seven years old, stands seventeen hands high, and weighs 1660 lbs. He is a descendant of the English Coach Horse on the side of his sire. His dam is Lady Jane, got by Highlander. Her dam was got by Duncanan, and her grand-dam by Old Messenger."

These horses show many superior points, being not only powerful draft horses, but excellent roadsters.

Second best pair of draft horses; greys; eight years old; Richard Richards, Mount Pleasant. $5.

Best Gelding (Henry); five years old; Nicholas Ehle, Kenosha. Diploma.

Second best gelding (Don); sorrel; five years old; Joshua Davis, Kenosha. $3.

Best mare (May Henry); four years old; William Shallock, Milwaukee, Diploma.

Second best mare; sorrel; five years old; Sabina Barney, Waukesha. $3.

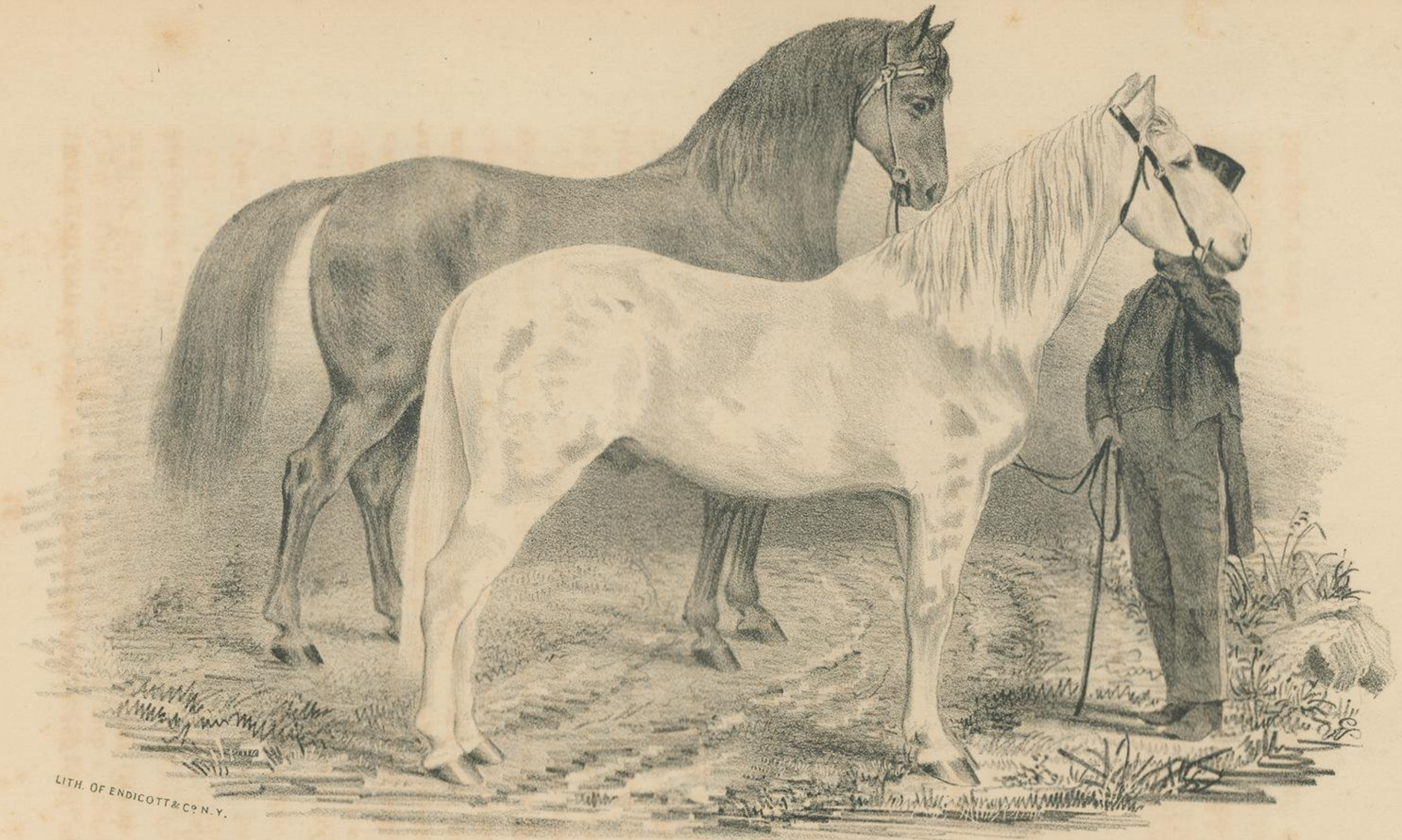
JACKS AND MULES.—No. of Entries, 8.

Judges.—Erastus B. Wolcott, Milwaukee; Geo. C. Pratt, Waukesha.

Best jack; Spanish; six years old; David Williams, Geneva. $5.

Second best jack; brown; B. A. Jenkins, Genesee. $3.

Best pair of mules; ten years old; Talbot C. Dousman, Ottawa. $5.



GRAY SAMPSON, AND WINDFLOWER,

Draft Horses, the property of SIMEON RUBLE ESQ[R]. of Beloit, winners of the First Prize at Milwaukee, 1852

LONG WOOLED SHEEP.—No. of Entries, 43.

Judges.—Thomas T. Whittlesey, Pheasant Branch; Reuben M. Norton, Racine; Talbot C. Dousman, Ottawa.

Best buck over two years; Thomas K. Carr, Oak Creek. **$4.**

Second best buck over two years; John Hinton, Eagle. **Transactions.**

Second best buck two years or under; John Hinton, Eagle. Youatt on Sheep.

Best pen, three buck lambs; John Hinton, Eagle. $3.

"I pen my sheep every night. They have a warm cot where, when it is very cold, they go, but when it is mild, they lie outside. I feed them on timothy and clover hay; about the beginning of March I add turnips. I feed the ewes and lambs on timothy and clover in the spring, and wean the lambs in July, on the lattermath, after the timothy and clover is mowed. John Hinton."

MIDDLE WOOLS.—No. of Entries, 58.

Judges—Thomas T. Whittlesey, Pheasant Branch; Reuben M. Norton, Racine; Talbot C. Dousman, Ottawa.

Best buck over two years; A. P. Lyman, Sheboygan. $4.

Best buck two years or under; N. B. Clapp, Kenosha. $3.

Best pen, three ewes, over two years; N. B. Clapp, Kenosha. $3.

Best pen, three buck lambs; N. B. Clapp, Kenosha. $3.

"On several accounts, for this country, I prefer the Southdown sheep to the Merinos. They are much hardier animals, have stronger constitutions, and are better calculated for mutton—averaging, at least, one-third larger size than the fine-wool Merinos. For feeding, they are unsurpassed; producing a superior quality, and greater weight of flesh from the same feed than any other sheep. The ewes are very prolific. The lambs, when young, are usually stout and healthy—much easier raised in cold weather than fine-wool lambs. I prefer them to the Leicesters or Cotswolds. They cut nearly the same quantity of wool, and of a finer quality; and with the same feed will produce as much flesh, and of a superior quality. They do not require as much protection from storm, on account of the compactness of the fleece. They are far superior, in crossing with the fine-wool sheep. A. P. Lyman."

MERINOS.—No. of Entries, 141.

Judges.—Thomas T. Whittlesey, Pheasant Branch; Reuben M. Norton, Racine; Talbot C. Dousman, Ottawa.

Best buck over two years; Almon Atwood, Waupun. $4.

Best buck two years or under; Wesley P. Benson, Johnstown. $3.

Second best buck two years or under; David Hall, Gaines, N. Y. Youatt on Sheep.

Best pen, three ewes, over two years; Almon Atwood, Waupun. $4.

Second best pen, three ewes, over two years; Edgerton & McCarter, Summit. Transactions.

Best pen, three ewes, two years or under; David Hall, Gaines, N. Y. $3.

Second best pen, three ewes, two years or under; H. B. Burritt, Muskego Centre. Youatt on Sheep.

Best pen three buck lambs; Almon Atwood, Waupun. $3.

Best pen three ewe lambs; H. B. Burritt, Muskego Centre. $3.

Second best pen three ewe lambs; George C. Pratt, Waukesha. Youatt on Sheep.

Almon Atwood's Statement.

"These sheep I have raised from some pure-blooded Merinos, which I bought of Edwin Hammond, Esq., of Middlebury, Vt., in the autumn of 1847. Mr. Hammond purchased his flock of Mr. Stephen Atwood, of Litchfield county, Conn., who has bred pure from the Humphrey importation of Spanish Merinos. These sheep are noted for their hardiness of constitution, and for the large amount of fine wool they produce, in proportion to the size of carcass. Bucks of this flock generally shear from ten to sixteen pounds of washed wool; the ewes from four to eight pounds. My flock of ewes, sixteen in number, sheared ninety-four pounds of washed wool the past season, and reared sixteen lambs, with ordinary keeping. The fleeces ranged from four to seven and three-fourth pounds.

"The bucks, when they have attained their full growth, weigh from one hundred and forty to one hundred and seventy-five pounds; the ewes, from eighty to one hundred and thirty pounds. The outward appearance of this wool, in its natural state, is quite dark; but when opened, it appears very white and glossy, with a fine, beautiful crimp. Sheep will do well, in summer, on grass alone, in flocks ranging from one hundred to two hundred, if kept within enclosures; but they can be kept, in much larger flocks, by allowing them to run at large on our prairies and openings, where there is an extensive range. When kept in this way, a shepherd should be with them, to keep them from straying, and collect them together at night. In winter, I keep my sheep on our wild hay, and they can be kept very well on hay only; but I think it much better to feed some grain. I think wheat bran the best, especially for breeding ewes; and if I wish to feed heavier, I mix boiled barley and oats. Oats is a very good grain for sheep, and I think feeding in the straw preferable. Potatoes, turnips, carrots, and beets are excellent for sheep, when the weather is mild, but, when very cold, I think grain better. Some method should be taken to prevent the sheep from running over their fodder; either with racks or boxes. I prefer the latter, made of boards, about one foot in width, with a space, seven or eight inches, between them, and two and a half feet wide. Sheds should be provided, and it is better if they can be arranged so as to feed under shelter, and confine the flock there during storms. Sheep require water as much as any other stock. It should be situated convenient to the yard; for if it is not, they will go without for days, in very severe weather, rather than expose themselves to the piercing winds—which is very injurious.

ALMON ATWOOD."

WESLEY P. BENSON'S STATEMENT.

"My sheep are bred from two of the most popular flocks of Spanish Merinos in Vermont—(the Brewer and Atwood flocks). The weight of wool of my buck, when one year old, was thirteen pounds; and his weight of carcass was one hundred and twenty-six pounds.

"From the earliest ages, sheep have been classed among the most valuable of domestic animals. Previous to the deluge, they were offered in sacrifices; and since that period, their flesh has been used for food, and their wool for clothing, in all quarters of the world.

"No other animal requires so much attention to its food, during winter, as the sheep. When first brought in for the winter, they are usually confined in so small a space, and in such numbers, that the air becomes impure, and will soon produce disease. It will be a great preventive of disease, to smear their noses with tar, as often as once in two weeks, during the winter. Although no better food for sheep exists than ripe, well cured, timothy hay and clover, yet they will do well with our marsh hay, and oat straw, when cut green and well cured. Potatoes, turnips, and carrots I find of great advantage to sheep, in this country. My manner of feeding these roots is, to cut them fine and mix them with corn meal. Sheep suffer much, in winter, by being deprived of green food, and not having access to the ground. It is well to let them have a few feet of turf, loam, or gravel. Should this become frozen, break it up occasionally, with a crowbar or axe. I find it difficult to give the Spanish sheep grain enough to start their wool. I commence with a pint of oats per day, and afterwards increase it to a quart per head.

"In order to raise good lambs, I find it beneficial to feed the ewes, before and after dropping, with carrots, turnips and beans. My lambs, at the age of two months, have weighed from thirty pounds to forty-five pounds. This feeding adds also to the weight of the clip from the ewes. My ewes have cut from five and a half pounds to eight pounds per head. Although it may be considered that I take too much pains with my sheep, yet I only pursue my New England habits; and in this I shall continue until I am satisfied that there is a better way. As soon as mild weather appears in spring, and long before the snow has disappeared, sheep exhibit an inclination to leave their long confinement, and seek their food in the meadow or pasture. It is well, however, to keep them confined until the snow has mostly disappeared, and the ground becomes nearly dry. Sheep at this season should be kept where they can have access to the ground in the day time, and be fed occasionally with potatoes and turnips.

"In summer, sheep require pastures that are dry. They thrive best on high table land, or on mountain ridges, abounding in bitter plants and aromatic herbs. In Wisconsin, we have one of the best climates in the Union for the Spanish Merino sheep.

"For six weeks before yeaning, the ewe should be deprived of most of her accustomed supply of potatoes and other vegetables, as these are calculated to produce a surplus quantity of milk, which is frequently injurious. At the time of yeaning, however, a small quantity may be given, as it will tend to strengthen the ewe. If yeaning comes when the nights are cold and frosty, the ewes should be warmly housed.

WESLEY P. BENSON."

SAXONS—No. of Entries, 33.

Judges.—Thomas T. Whittlesey, Pheasant Branch; Reuben M. Norton, Racine; Talbot C. Dousman, Ottawa.

Best buck over two years; Harvey Durkee, Kenosha. $4.

Second best buck over two years; N. B. Clapp, Kenosha. Transactions.

Best pen, three ewes, two years or under; N. B. Clapp, Kenosha. $3.

Best pen, three ewe lambs; N. B. Clapp, Kenosha. $3.

CROSS BREEDS.—No. of Entries, 56.

Judges.—Thomas T. Whittlesey, Pheasant Branch; Reuben M. Norton, Racine; Talbot C. Dousman, Ottawa.

Best buck over two years; George C. Pratt, Waukesha. $4.

Second best buck over two years; W. S. Skinner, Ela, Ill. Transactions.

Best buck two years or under; H. B. Burritt, Muskego Centre. $3.

Second best Buck two years or under; David Hall, Gaines, N. Y. Transactions.

Best pen, three ewes over two years; David Hall, Gaines, N. Y. $3.

Best pen, three ewes two years or under; George C. Pratt, Waukesha. $3.

Second best pen, three ewes two years or under; David Hall, Gaines, N. Y. Youatt on sheep,

Best pen, three buck lambs; Luther Rawson, Oak Creek. $3.

Best pen, three ewe lambs; David Hall, Gaines, N. Y. $3.

George C. Pratt's Statement.

"I received my original stock of sheep from Vermont. They were said to be a cross between the full blood Spanish Merino and the full blood Saxony. They were quite small sheep, when compared with my present stock, and would shear about three pounds of wool per head. My manner of keeping will not differ much, I presume, from other wool growers in Wisconsin. Our accommodations for keeping sheep in Wisconsin at present are poor, at best, when compared with those of older wool growing States. My sheep receive but little attention from the time of shearing, which is usually about the middle of June, through the summer and fall, although I always intend to give them good pasturage, and salt them every week. Sheep require but little water in the summer. Sometimes I have them in a pasture with plenty of water, and sometimes not any. They thrive as well in one case as the other, for aught that I can see. But in the winter they will drink more or less every day, and should have it constantly by them. I keep my sheep in separate yards in winter—not over one hundred in each—and attached to each yard I have a shed of sufficient size, so that all can lie down in it, and constructed in such a manner that they will be entirely protected from the storms. In case of a bad storm, (especially a rain storm,) I shut them in the sheds, for I consider it better for them to go without food for twenty-four hours, than be exposed to a bad storm. In winter, I keep my yards and sheds well littered with straw, so as to have them all the time dry and clean. I feed my sheep with the best of hay—it cannot be too good—in common box racks, giving them a little at a time, and usually three times in the course of the day; but I never feed them after dark, nor before light in the morning, as they do much better to be kept as quiet as possible, and sheep are very much afraid of a lantern or light. I have formerly fed but little grain to my sheep, but I find by experience that I get better paid for my grain in feeding it to my sheep than in any other way, for it costs but little more to winter a flock partly on grain and partly upon hay, than it does to give them hay alone. They will thrive much better with a little grain, and shear enough more wool to pay for it. I think barley and oats mixed in equal quantities, sowed together, and fed in the straw is a very profitable kind of feed. I give my sheep a little sulphur occasionally through the winter, mixed with salt. It is an excellent plan to give sheep some kind of roots occasionally through the winter, especially towards spring; beets, carrots and turnips, are all good. Sheep, at first, will not always eat them readily; but if they are cut fine, and a little corn meal put on to them a few times, they will very soon learn to eat them.

"I intend to have my lambs come about the first of May; as that is about as early as we usually have grass. I find that those of my lambs that come the first of May, are larger in the autumn than those that come in March, unless the ewes have a good deal of extra feed, to make them give milk. By having my lambs come as late as the first of May, I find no trouble in raising them. I usually raise about nine-tenths of the lambs.

"I wean my lambs when four months old. I select the largest and best-wooled lambs, every year, to breed from; and in that way I have increased the size of my sheep full one-quarter from my original stock, and have increased the weight of fleece, from about three pounds to four pounds, on an average; I think my last clip averaged a trifle over four pounds to the fleece, and my sheep were four-fifths ewes. My bucks, at two years old, will average about one hundred and sixty pounds, and will shear from seven to nine pounds of clean washed wool. I think some of my smaller sheep the most profitable, from the fact that they will shear more wool, according to their size, than some of the larger ones. I think that the sheep that will shear the most wool (of the same quality) in proportion to the food they consume, is the most profitable. I am speaking now of wool-growing—not mutton-growing. I have lately purchased some full-blood Spanish Merinos, and intend to keep them distinct from my cross-breeds, giving them the same keeping, so that I may be better able to decide which is best. I am satisfied that the wool of my cross-breeds will shrink much less than the Merino, in manufacturing; it is longer and finer, and almost entirely free from gum. I intend to exhibit a few fleeces of each kind at the next State Fair, and give others a chance to judge.

"I think some of our Farmers lose, every year, from two to five cents on a pound, by not having their wool in a proper condition to sell. Some have it done up one side out, and some the other; some wad it up together in a loose manner, and twist the neck around the rest of the fleece. Wool not only looks better, but it is better, by being done up snug and tight. The packer can get it into a smaller space, consequently it is easier to transport, and when properly packed, it will increase in weight, instead of shrinking, as will be the case when loosely packed. I think, also, that every sheep offered for a premium should have its fleece exhibited, as the Judges would be better able to decide upon the quality of the wool than they would by examining the wool upon the sheep, as some sheep are shorn a month earlier than others.

"I think some of our Farmers are wrong in the idea that the coarse-wooled, or Leicestershire, sheep are the most profitable, either for wool or mutton. They certainly shear heavy fleeces, and have heavy carcasses; but it requires a great amount of good keeping to make them so.

I am satisfied that my flock of cross-breeds will produce more dollars worth, of either wool or mutton, from the same amount of food, than any flock of Leicestershire sheep in the State. The mutton may be, and probably is, of better flavor; but our farmers generally like the flavor of the dollars best.

GEORGE C. PRATT."

The Committee, in their report, say that "the Exhibition of Sheep at the late Fair was very fine, and of excellent quality. It was gratifying to see the increased attention paid to this kind of stock. The number of French and Spanish Merinos, both ewes and bucks, was very large—and probably of as good a quality as some which sold in the Merino speculation, at from six hundred to fifteen hundred dollars. The South Downs elicited the admiration of the Committee. The long-wooled sheep were excellent specimens of their kind, and the cross-breeds were superior.

"The Committee found difficulty in approaching the sheep-pens through the crowd of spectators assembled around them. This furnishes undeniable evidence that there is springing up a laudable zeal to improve the quality and value of our flocks—and that the importance of sheep-husbandry is rapidly diffusing itself throughout the State.

"One Committee is not adequate to inspect and do justice to all the different classifications of the various kinds of sheep—and our labor would have been greatly relieved, if the exhibited sheep of the same class could all have been arranged in pens adjacent to each other, so that all of one distinct class could be inspected at once, without the disconnection of pens of cattle, or other kinds of sheep, to distract the atttention. It was hard labor for the Committee to decide, what should be the criterion of excellence when competition was so close. A manufacturer of wool would be an important auxiliary on a committee with wool growers.

"Sheep are, perhaps, all things considered, one of the most valuable animals given to man. No animal is of greater utility. Sheep not only supply food and clothing to the thousands who cultivate and rear them, but the wool they afford sustain in active employment large and extensive manufacturing establishments, thereby contributing in large proportion to the productive labor, and to the wealth of the country. In some sections they are reared for their flesh, but here they are grown for their wool.

"The properties of wool are various. Fineness, purity, length of staple, elasticity and color, are most important. The quantity of fine wool which a fleece yields, and the degree of fineness, constitutes its value. The quality of wool varies not only in different sheep, but in the same fleece. The wool on the sides of the neck, and over the shoulders, the ribs and the back, is considered the finest. Together with the fineness of the fibre, we examined the length and trueness of the staple—for the more equal in quality the wool is on all parts of the body, the greater is the value of the animal that carries it.

"In connection with these qualities, the Committee gave the preference to that which was soft and pliable and elastic. In the opinion of the best judges, the fibre—or, as in the sheep dialect, 'the pile,'—cannot be too soft and silky, provided the strength thereof is not impaired. It is stated, that two packs of assorted wool being taken, possessing the same degree of fineness, but the one having the soft quality in an eminent degree, and the other being harsh, the cloth prepared from the first, at the same expense, will be worth more to the manufacturer than the other by full twenty-five per cent. The color of the wool is of no trifling importance. The sheep which gave the best samples of purity and whiteness were preferred, and where other things were equal, the Committee regarded the frame of the sheep, in forming their opinions.

"The sheep of Mr. Atwood, of Waupun, possessed all these qualities—and the weight of fleece, grown in less than a year, was thirteen pounds. Some sheep had the record of weightier fleeces, but for fineness, length, purity, and softness, the premium sheep, in the opinion of the Committee, excelled; and yet the competition was so close as almost to defy any discrimination.

"To those Farmers who wish to cultivate sheep for their flesh, the Leicester or Bakewell breed is probably the best. Specimens of this breed were exhibited. For beauty and fullness of form, and weight of carcass, and propensity to fatten, it is equalled by no other breed.

"The South Downs exhibited were beautiful sheep.

"Probably no country possesses advantages for the successful prosecution of sheep husbandry equal to the United States; and, as one of those States, Wisconsin, from its undulating surface, its fine herbage, and well-watered pastures, sheltered by trees from the summer's sun, is well situated for the most prosperous culture of sheep. A Report to Parliament of the state of sheep husbandry in the North American Provinces, pronounced the texture of the wool from New Jersey sheep superior, in almost every point of excellence, to that raised in Great Britain.

"The reverse is now the fact. Great and permanent improvements in agriculture are the results of the enlightened views, judicious and persevering efforts of public-spirited, patriotic men.

"So long ago as A. D. 41, a Farmer in Spain, Columella, introduced to his farm some fine African rams, and a few of the Tarentine sheep, and laid the foundation of the present improved breed of Spanish sheep. The Farmers of Wisconsin must do the same. Sheep husbandry demands a large share of the farmer's attention. The New Leicester, or Dishley breed, are the successful crossings by Robert Bakewell, of Dishley, England. The Spanish Merinos are the best, for profit, for though the form of the pure Merinos is bad—being small—and the return in mutton deficient, both in quantity and value; their excellence consists in the unexampled fineness and the peculiar felting property of their wool. From the closeness of their coat, and the luxuriance of the yolk, they do not suffer much, if any, more than other breeds from the extremes of cold and wet.

"The filament of the wool has scarcely pushed itself through the pores of the skin, than it has to penetrate another and singular substance, which, from its adhesiveness and color, is called the *yolk*. It abounds about the breast and shoulders, the very parts that produce the best and most abundant wool; and in proportion as it extends, in any degree, over other parts, the wool is there improved. When there is a deficiency of yolk, the fibre of the wool is dry and harsh and weak, and the whole fleece becomes thin and hairy. When it abounds, the wool is soft, oily, and strong. The yolk gives richness and pliability, as well as nourishment, to the wool. Bad management, or poor keeping, by arresting the secretion of the yolk, or changing its properties, will, in a very great degree, impair the pliability of the wooly fibre.

"We know of nothing which will give as good return to the Wisconsin farmer as sheep husbandry. By a judicious cross of the Merino with our own sheep, selecting the most vigorous, a breed of fine-wooled sheep will be produced, which will combine both qualities for wool and mutton. The sheep improve the farm. Roots can be easily raised for their nourishment. Wool is easy of transportation, and a cash article, and fat mutton is, or ought to be, everywhere esteemed a luxury. Sheep require air and exercise in the coldest weather, but they must be sheltered from the storms and cold. This prevents disease during summer. Agricultural Societies will exert a great influence in sheep husbandry.

"A fine lot of Merinos was exhibited, from New York, and offered for sale, and each succeeding Annual Fair will exhibit an increased interest in this subject. Wisconsin can be the market for the best breeds, to western wool-growers, if they turn their attention and enterprize to it."

SWINE.—No. of Entries, 16.

Judge.—S. M. Booth, Milwaukee, Chairman.

Best boar one year old, and under two years; Talbot C. Dousman, Ottawa. $3.

Second best boar one year old, and under two years (grass breed); Joseph Carpenter, Waukesha. Youatt on the Pig.

Best boar six months, and under one year, (Suffolk); S. F. Field, East Troy. Transactions.

Best breeding sow two years old and over; William Knight, Alto. $5.

Second best breeding sow two years old and over; F. H. Westover, Milwaukee. Transactions.

Best sow six months, and under one year, (Suffolk); S. B. Edwards, East Troy. Transactions.

Second best sow six months, and under one year; James T. Walklin, Eagle Centre. $1.

Best lot of pigs, not less than five, under ten months; Benjamin Betty's, Mequon. Transactions.

Joseph Carpenter's Statement.

"Grass-breed hogs have been raised in this part of the country for the last eight years. They are peaceful, quiet and lazy hogs, not inclined to get into mischief; and if a thoughtless child happens to leave the gate unfastened, allowing them to stray away, it is no more trouble to get them back than a pet horse. They are ready for the butcher at any time after they are six weeks old, being always fat; at one year of age, weighing from one hundred to two hundred pounds. We milk six cows; the milk, with a little meal added, makes excellent feed for young porkers. When young pigs first leave the sow, if in the winter, we take two bushels of corn and one of oats, and have them ground together into fine meal, and then make it into mush, and feed them with it. When we are short of milk, we take the same provender, pour on boiling water, and when cool, feed it to our pigs for a few weeks before they are butchered. Within the last twelve months we have sold ten fat pigs. The youngest was six months old, the oldest eleven months old; the smallest weighed eighty-four pounds, and the largest one hundred and eighty-two pounds. Two of these six months' old pigs were from a small China sow and a very large boar. They inherited early maturity from the sow, and size from the boar. They weighed one hundred and thirty-five pounds, and one hundred and thirty-seven pounds. We feed to our store hogs in winter the slop of the house, a few oats or roots, and sometimes a little corn. Last summer my boar and two breeding sows lived in a field of clover and timothy. We fed them one ear of corn a day, giving the boar a quarter of a pail of milk in addition once a day. The Waukesha butchers were anxious to buy them when living on this pasture. It is far more pleasing to have a breed of hogs that the butchers desire to buy from the pasture, than to have a neighbor come and say, 'Your hogs are in my grain—you must come and get them out, and take care of them.'

"Grass breed sows are poor breeders. The pigs are, at first, very small and slim, but with care in feeding the sow, and a good, comfortable pen, the pigs can be raised. I have often been grieved, in passing the pig-sty of a poor Farmer, to see his hogs in a pen with the sky for a covering; and after the rainy weather, with the mud several inches deep in the pen. It is not surprising that hogs will not gain in such a place, though fed ever so well. If a man is too poor to build a comfortable pen, he had better sell his hogs, for they will only add to his poverty.

"Our Farmers here were accustomed to let a sow raise one lot of pigs, and then fatten her. This soon runs out a good breed. Now, when they get a good breeding sow, they keep her year after year, and expressly for breeding. We have now some very fine pigs from a grass-breed sow, and a Mocho boar.

"If we depended on an Eastern market, we should make heavier pork. We now prefer that breed of hogs that will give an hundred weight of pork from the smallest amount of feed.

JOSEPH CARPENTER."

WILLIAM KNIGHT'S STATEMENT.

"The weight of my sow, exhibited at the Fair at Milwaukee, was five hundred and thirty-two pounds, being then in store order. Her breed is one-half Leicester, with a mixture of Irish, Byfield, and several other bloods—as I have, for ten years, improved whatever opportunities were presented of getting good crosses, and had taken great pains prior to raising this sow. The excellence of that cross consists in their growing large and fat at any age, with ease, and making good pork on a small quantity of feed. The manner in which I have kept my sow, has been the manner usual to good farmers. I always give my breeding sows the liberty of a small field, or the barn yard, or commons. Pigs will not grow in good shape when penned up. I sold one of her pigs, when five months old, for twenty-five dollars—the pigs being half-blood Suffolk. My sow is now with the Suffolk boar.

William Knight."

F. H. Westover's Statement.

"My hogs are in pasture during the summer, and have no feed but the milk and slop of the house. In the winter, I feed them grain sufficient to keep them in good growing condition, and am sure to give them a warm and dry bed. I am now feeding my sow a pail of swill and eight or ten ears of corn per day; with that feed she keeps quite fat. She will breed once only in the year. She is four years old, and has had four litters of pigs. She had a litter of pigs, sired by a Leicestershire boar, among which was a marked distinction; a part partaking largely of the Leicestershire, and part of the Byfield. These pigs I fed alike. When I shut them up to fat, the Leicestershires, having the largest bones, were the heaviest, but when they were killed, the Byfields weighed the most.

"The pure Leicestershire hogs, if kept till they are full grown, and well fattened, will make more pork than either the Byfield or the crossed-breed that I have; but what the farmer wants, is the greatest amount of pork from a certain amount of feed. I know some think they must have larger hogs, but I think they are deceived as to the true economy of making pork. We want to employ our feed where it will make *the most pork*. This is the object I have endeavored to attain in my breed of pigs, the superior qualities of which lie in the following characteristics: Their small bones, and a great weight of pork; their unusual quietness and easiness to keep; their fattening equally well at any age; the small amount of feed requisite for fattening; and the superior quality of the pork, having a very thin rind.

"The Berkshire hogs have *too thick a rind.* The Leicestershire hogs are great consumers, and will not fatten well unless kept till they are full grown. The Byfieid have neither of these faults, but are too small. By crossing the Byfield and Leicestershire, we obtain the good qualities of the former, and something of the size of the latter. Then we have a breed that will stay where we put them, and weigh all we expect of them. By taking a little pains, our farmers will save their trouble, and not be troubled with *great consumers and small returners.*"

F. H. Westover."

POULTRY—No. of Entries, 27.

Judges—P. C. Hale, Milwaukee, Chairman.

Best lot of Dorkings, not less than three, one cock and two hens; Robert E. Gillett, Milwaukee. Barry's Fruit Garden.

Best lot of Polands; Joseph Carpenter, Waukesha. American Poultry Yard.

Best lot of Brahma-Pootra fowls; Leonard Kennedy, Milwaukee. Thomas's Fruits.

Best lot of Turkeys; F. H. Westover, Milwaukee. American Muck Book.

Best lot of Muscovy Ducks; Richard Reynolds, Greenfield. American Poultry Yard.

Best lot of Poultry owned by exhibitor; Robert E. Gillett, Milwaukee. $3.

Best lot of Shanghais; Franklin Ripley, Jr., Milwaukee. Johnston's Practical Agriculture.

The Committee, in their report, remark that "they observed with regret the little interest felt by the majority of farmers in this State, in rearing anything but the most common fowls. While there has been a manifest improvement of the animals of the State, during the last five years, the improvement of the fowl kind has been regarded as too small a business to secure the attention of any but women and children. The same breed of chickens have been allowed to run together, unchanged and uncrossed, year after year, until forty of the common hens produce a less number of eggs and chickens in a year than six well bred hens should.

"It costs no more to keep a good fowl than a poor one. A good hen will lay between one hundred and fifty and two hundred and fifty eggs a year.

The average number of eggs laid by each hen now in this State will not, probably, exceed thirty in a year, and the average weight of the hens will hardly exceed two and a half pounds each. An expenditure of five dollars will enable a producer to raise hens weighing on an average seven pounds each ; and the cost of keeping good hens is so little more than the cost of keeping the common kinds, as not to be noticed by a large majority of farmers. The large classes of fowls have been found, by experience, to be more hardy and more easily raised than the common kind, and much better layers. This may, doubtless, be accounted for in part by the extra attention and care usually given them ; but anything which is worth raising is worth careful attention.

"There is at present no business in which a farmer can engage, by which he can invest from ten dollars to fifty dollars so profitably as in poultry. An investment of even two dollars will increase the value of a large majority of the poultry yards of our State, in one season, more than three hundred per cent. In this respect, Wisconsin, as a State, is farther behind the older States than in any other particular. While it is an every day occurrence for fowls to be sold in the New England States and in New York at from five dollars to twenty-five dollars a pair, and frequently as high as seventy-five dollars a pair, ours are sold at twenty-five cents a pair, and not one in fifty of our citizens ever saw a fowl worth a dollar.

"But this state of things is passing away. The present exhibition of owls, although in most States it would have been considered meagre enough, has done much towards stimulating admirers of fowls to improve their stock. It is, however, a little remarkable that the interest awakened on this subject is principally confined to others than the "tillers of the ground," and to persons who cannot raise fowl with anything like the economy a farmer can. Of the fowls exhibited at the State Fair, hardly any were raised by farmers. We trust that this cannot long be said of them. They are not slow in studying their interests, and if the present is not a time for them to engage in this department of a farmer's business, then we misjudge.

"The following are the varieties most worthy of the attention of our farmers, viz.: Shanghai, Cochin China, Chittagong, Brahma Pootra, Hoang Ho, Dorking, Black Spanish, Bolton Grey, or Creole Game, and Polands.

"While we recommend every person who intends to raise fowls for sale to procure the most perfect specimens of pure blood stock, we ought, perhaps, to state that the cross-breeds, if not bred in and in, lay as large eggs, and as abundantly, as the pure breeds, and often produce as large stock; so that, for the use of the table, or for layers, they are nearly or quite as good as the best imported stock. An individual owning six good hens, weighing from three and one-half to four pounds, by procuring a cock weighing ten pounds, with ordinary care, might raise in one season one hundred chickens, which at eight months old, would average from six to seven pounds each. This fact has led some men, more artful than honest, to exhibit at Fairs a class of fowls to which they give a new name, and enter as a new variety; while, in reality, they are only a cross of two known classes of fowls, and their progeny may be as ring-streaked as Jacob's cattle. No variety of fowls can be called pure, unless the progeny resemble in color and shape the parent bird. Care should therefore be taken, that the public are not imposed on in this respect. Cross-breeds should be called cross-breeds, and nothing else. On the other hand, some persons having taken pains to procure pure blood fowls, are unwilling to admit that any one else has any pure bloods but themselves, and unhesitatingly pronounce everything they see impure, but their own, although no other eye, however practised, can detect it.

"The season of the year when the State Fair fs held, is most unpropitious for exhibiting old poultry, it being their moulting season, when fowls are generally poor, and from loss of feathers are ragged and ugly in appearance. Some of the specimens exhibited, however, were remarkably fine, and would have done credit to any State.

"The following is a list of the varieties of fowls, and the names of the exhibitors:

"White Dorking.—There was but one contributor of this variety of fowls. These fowls were young, but promised well. Exhibited by Leonard Kennedy, of Milwaukee. This variety is very popular, and much sought after at the East.

"Speckled Dorking.—There were but a few of this specimen of fowls, but those offered were good. One hen was very fine. The owner was offered five dollars for her, but promptly refused to take ten dollars. Exhibitor, Robert Gillet, Milwaukee.

"Poland.—There was but one specimen of this variety exhibited, which was very fine; but we are assured that better fowls might have been exhibited; and have learned since the exhibition, that the owner, fearing he might lose his fowls, kept his best specimens at home. The fowl exhibited was owned by Joseph Carpenter, of Waukesha.

"CHITTAGONGS.—There was a choice lot of fowls entered by this name, all young ones except one pair, which were procured last year in Hartford for Chittagongs. It has since been ascertained that they are the Brahma Pootra variety, and the owner now calls them by that name. This variety of fowls is comparatively new in the country, and are among the very best imported. Several pairs have been sold in Massachusetts during the present season, for seventy-five dollars per pair. They weigh from eighteen pounds to twenty-four pounds per pair, are excellent layers, their eggs being nearly twice as heavy as common hen's eggs. A cross between the Brahma Pootra and Dorking fowl are decidedly handsome. There were no Chittagong fowls exhibited.

"SHANGHAIS.—There was a good show of this kind of fowls, embracing the white, buff or red, brown, and gray varieties; also, some crosses of the Shanghais with other varieties, which were good specimens. Among the best were those exhibited by Franklin Ripley, Jr., whose stock, taken as a whole, was regarded as superior to any exhibited, embracing white, buff, and brown. Leonard Kennedy exhibited choice buff and brown Shanghais, and Alexander Mitchell a pair of old Shanghais, which, in consequence of moulting, showed badly, but, like many other things, were "better than they looked." John Geib, of Wauwatosa, exhibited six Shanghai cocks, hatched in May last, which attracted considerable attention, in consequence of their exact resemblance to each other in color and size. The mother of these fowls laid one hundred and twenty-seven very large eggs in the autumn and winter months. The Shanghai fowls are excellent layers. It is not uncommon for them to lay seventy eggs in eighty days. They weigh from seventeen to twenty pounds per pair.

"COCHIN CHINA.—There was a single pair of this variety exhibited by Charles Douglass, of Chicago, with several pair of cross-breeds, all of which were good specimens of their kind. The pair of Cochin China fowls were young, but decidedly handsome. The mother cost fifteen dollars. These fowls are not quite so large as the Shanghai fowl, and some other varieties, and by many are regarded as inferior to none of the imported breeds.

"There were no Game fowls offered, but it is to be hoped that this variety will not be overlooked another season. The hens are choice layers, and their eggs very large in proportion to their size, which rarely exceeds five pounds. The objection to keeping them is their fighting propensity.

"Of *Turkies, Muscovy Ducks, Small Ducks, Guinea Hens* and *Peacocks*, there was one lot of each exhibited. They were all good, but not superior fowls. We hope that a much larger and choicer variety of specimens will be offered another year.

"Of *Geese*, none were offered.

"Your Committee believe that there will be a great practical benefit resulting from the recent show and future exhibitions. Many persons have been stimulated to send East and procure choice varieties of fowls; and many others will doubtless be induced to do so. Choice fowls of the best varieties can also be procured in Milwaukee at very reasonable rates.

"It is admitted by fowl breeders in New England, that the same variety of fowls grow larger in the Southern and Western States than in the Eastern States. We trust that the time is near at hand, when Wisconsin will produce fowls, animals and men, not inferior to any State in the Union. We have the resources—let us use them."

PLOUGHING MATCH.—No. of Entries, 6.

Judges.—William Burgit, East Troy; H. B. Hawley, Milford; J. D. Merritt, New California.

Best ploughing with horses; E. W. Edgerton, Summit. Silver Medal.

Second best ploughing with horses; Clarke Nettleton, Caledonia. Bronze Medal.

Best ploughing with oxen; George O. Tiffany, Milwaukee. Silver Medal.

The Committee in their report remark, "that the match was spirited and well contested. It was opened by Col. Billings, the President of the Society, who turned a few furrows, setting an example well worthy of imitation by the farmers of Wisconsin, and showing that he was no holiday farmer. He was followed by the competitors, who all did their work in a superior manner.

"Mr. Edgerton, to whom was awarded the first premium, used the Michigan double plough, which the Committee regard as a superior plough, and one that should be in the hands of every farmer.

"Mr. Nettleton, to whom was awarded the second premium, used the common steel plough, and performed his task in a workmanlike manner.

"But one ox team was entered. There being no competition, your Committee award to Mr. Tiffany the first premium, he using the Eagle plough, and performing the work in a superior manner.

FARMING IMPLEMENTS, No. I.—No. of Entries, 86.

Judges.—Mark Miller, Janesville; E. J. Hazard, Lagrange; Joseph Kerr, Randolph.

Best farm waggon for general use; Cornelius Morse, Milwaukee. Silver medal.

Best harrow for general use; Richard E. Ela, Rochester. Bronze medal.

Best corn cultivator; Stephen Coates, Walworth. Bronze medal.

Best fanning mill; A. P. Dickey, Racine. Bronze medal.

Best horse rake; Thompson Littell, Milwaukee. Bronze medal.

Best ox bow pins; Thompson Littell, Milwaukee. Certificate.

The Committee in their report remark that "the Scotch harrow exhibited by Mr. Ela, and to which they award the first premium, is the best, in their opinion, for general use; but they deem it an act of justice to other competitors to remark in this connection, that the Geddes harrow is preferable for use on land where stones, grubs, or stumps abound, or rubbish, such as stubble, weeds, &c., tending to clog—and this opinion is based upon practical experience.

"Four fanning mills were entered for competition, one of which by Richard E. Ela, of Rochester; another by L. S. Blake, of Racine; another by A. P. Dickey, of Racine; another by A. W. Dawley, of Milwaukee. Between the first three, the Committee found it extremely difficult to make any discrimination in regard to the principles of their construction, in fact, none could be discovered worthy of notice, but for beauty of finish, and perfection in the adjustment of machinery, the one exhibited by Mr. Dickey was superior, and on these grounds your Committee award the first premium. The one exhibited by Mr. Dawley is new to your Committee; and having never seen it in practical operation, they cannot say anything in commendation of it.

"Plows.—There were a large number of plows on the ground, adapted to all soils and circumstances. Your Committee have selected six from some fifteen or twenty, and tested practically their relative capacity for work, and our conclusions are, that the Michigan steel plow, exhibited by Richard E. Ela, is the best for prairie soils. This plough is of excellent model and easy draft, and is, in the opinion of your Committee, the best that has ever fallen under their observation.

"For sandy or clay soils, the Committee would give the preference to the Peekskill Improved Plow, exhibited by Mr. Spencer, of Watertown. This plow is of good model for the soils named, and is made of cast iron, a material which will do more service in such soils than cast steel.

"The attention of the Committee was next called to a list of agricultural implements exhibited by Thompson Littell, of Milwaukee. Numbering in the aggregate sixty one articles, with instructions to recommend the award of premiums on such of them, as in the judgment of the committee might seem worthy. The greatest portion of Mr. Littell's collection, on a careful examination of the whole, we found made up of implements and tools of great utility, both to the farmer and housewife. The Committee awarded him several premiums, which will be found in the accompanying lists."

FARM IMPLEMENTS, No. II.—No. of Entries, 2.

Judges.—A. H. Taylor, Muskego; Joseph M. Stillwell, Mukwonego.

Best churn; Thompson Littell, Milwaukee. Transactions.

"A hay rack exhibited by Ira Blood, of Vernon, also came under the observation of this Committee, and they respectfully report that they consider it an improvement upon the common hay rack, in saving the scattering of the grain. It also shows the good taste of the owner in getting up a nice article. But your Committee are of the opinion, that it is too expensive an article to recommend for general use among farmers."

FARM IMPLEMENTS, No. III.—No. of Entries, 21.

Judges.—A. F. Cady, Watertown; Joseph Cary, Milwaukee; John B. Vliet, Milwaukee.

Best horse power for general purposes, on the sweep or lever principle; H. F. Cox, Racine. Bronze medal.

Best horse power, on railroad or endless chain principle; W. D. Bacon, Waukesha. Bronze medal.

Best corn sheller, hand power; A. P. Dickey, Racine. Transactions.

Best corn sheller, horse power; Thompson Littell, Milwaukee. American Muck Book.

Best seed planter, for hand or horse power, for hills or drills; Thompson Littell, Milwaukee. Bronze Medal.

Best thresher, to be used with horse or steam power; Marvin Hughes, Kenosha. Bronze Medal.

Atkins' Automaton Reaper and Raker; John S. Wright, Chicago. Diploma.

Best and most numerous collection of agricultural implements; Thompson Littell, Milwaukee. Bronze Medal.

Best and most numerous collection of agricultural implements manufactured in the State of Wisconsin, by or under the superintendence of the exhibitor, materials, workmanship, utility, durability and prices, all considered; Richard E. Ela, Rochester. Silver Medal.

DAIRY.—No. of Entries, 21.

Judges.—H. L. Palmer, Milwaukee; David Merrill, Milwaukee; E. C. Sage, Wauwatosa.

Best fifty pounds of butter; Mrs. E. W. Edgerton, Summit. Diploma.

"This butter was made in September, from a dairy of eight cows, being a cross of Durham with the native. The milk is set in eight quart tin pans, and left to stand twenty four hours before skimming, except in hot weather, when the milk would sour sooner. The churning is done three times a week, in a common stone churn. Two ounces of common salt are added for each pound of butter, and subsequently it is worked twice, with a wooden ladle—once at the time of salting, and the second time twenty four hours thereafter. The butter is worked as little as possible and get out the butter-milk. We use no saltpetre, or any other substance. We make very little winter butter, usually scald the new milk, and set it in a room where it will not freeze for twelve hours. The further process is the same as above.

Mrs. E. W. Edgerton."

Best ten pounds of butter; Samuel Brown, Milwaukee. Diploma.

"This butter was made on Tuesday, October 5th. The cream being gathered three days previous to churning. In summer the cream is kept in a cool place, but in the winter it is kept where it will not freeze. The cream is thoroughly mixed each time the milk is skimmed. Churning is done at least twice a week. The butter, after churning, is washed in water, until the water is clear from milk. Nothing but salt is used in making butter. We use the best kind of fine barrel salt; the quantity used is as suits the taste. Eight cows are kept on the farm. The cows have had no feed but grass during the summer and fall.

SAMUEL BROWN."

Best one hundred pounds of cheese; F. S. Eldred, Johnstown. Diploma.

"My dairy numbers thirty-five cows, which are pastured upon timothy and clover. My manner of making the three cheese exhibited, will be seen by the following table:

Time of making.	No. of Gallons of Milk.	Heat of Milk at setting.	Time of curding in minutes.	Time of breaking in minutes.	Time of heating in minutes.	Scalding heat.	Time scalded in minutes.	No. of teacups of salt	Quality of the curd.	Pressed weight of cheese green.	Weight of cheese at this date, 5 Oct.
										lb.	lb.
No. 1. June 28,	82	*86°	40	25	50	106°	30	6	Sweet.	80	75
" 2. " 29,	80	86°	35	30	60	106°	40	6	Sweet & fine.	76	72
" 3. " 30,	80	86°	40	30	45	106°	50	6	Sweet & coarse.	75	70
										231	217

"My butter is made from the same cows and pasture—no cheese being made while we are making butter. Butter was made from the 28th September to 4th October. Number of pounds made, eighty-four. Milk is strained in pans and skimmed as soon as sour, then churned immediately. Butter is washed until clear from milk, and then salted with common salt. After standing twelve hours it is worked, at which time I add one pound of crushed sugar, and one ounce of saltpetre to each hundred pounds of butter. It is then packed in firkins so as to exclude the air.

F. S. ELDRED."

* Fahrenheit.

Best single cheese; A. Smith, Troy. Diploma.

"This cheese was made in the latter part of June. My dairy is a small one, consisting of but ten cows. In making cheese, immediately after the curd has formed, we cut it up, and as soon as the whey rises, we dip off a portion of it, and put it into a kettle, heating it to about 100° Fah., when it is poured back gradually into the curd. After stirring it well, we put it into a strainer, and let it stand until morning. The morning's milk goes through the same process, and then the cheese goes to the press—thus making one cheese every day.

AUGUSTUS SMITH."

FLOUR, MEAL, SUGAR AND HONEY.—No. of Entries, 16.

Judges.—HARRISON LUDINGTON, Milwaukee; C. COMSTOCK, Milwaukee; ———, ———.

Best barrel of flour; B. A. Jenkins, Genesee. Diploma.

Second best barrel of flour; Jacob Brooks, Beloit. Bronze medal.

Best barrel of spring wheat flour; Samuel S. Reed, Kenosha. Certificate.

Best ten pounds of honey; P. H. Brown, Milwaukee. Bronze medal.

GRAIN AND SEEDS.—No. of Entries, 48.

Judges.—JOHN GALBRAITH, Mukwonego; B. A. JENKINS, Genesee; WILLIAM WILKINSON, ———.

Best sample of winter wheat; Joseph Dibley, Oak Creek. American Muck Book, and $1.

"This wheat was sown after barley, and three and one-fourth acres were grown. The land was manured with rough manure from the yard. I finished ploughing the land on the first day of September. The wheat was prepared for sowing by being soaked in brine, and afterward spread out to dry; about two bushels were sown to the acre. I finished sowing on the 3d of September. The wheat was cut July 25, 1852, and threshed August 29, 1852. It yielded twenty-seven bushels to the acre, being somewhat less than the yield of last year, which was an average of thirty-one bushels of the same kind of wheat.

JOSEPH DIBLEY."

Second best sample of winter wheat; Hiram F. Story, Milwaukee. American Muck Book.

"This sample of wheat forwarded by myself for exhibition, was the first crop taken from new ground, which was cleared in the month of June, A. D. 1851, and ploughed the first week in July following, with three yoke of oxen, and a heavy breaking plough.

"The ground then remained untouched, until about the middle of September following, when it was thoroughly harrowed, with one span of horses. After which the wheat was sown at the rate of two bushels per acre, and the ground was well dragged.

"The kind of soil is a mixture of black sand and clay. The wheat was harvested the last week in July last. The yield per acre was thirty-two bushels. I am unable to give an account of the entire expense.

HIRAM F. STORY."

Best sample of spring wheat; Peter Marlett, Milwaukee. American Muck Book, and $1.

"This spring wheat was raised in the town of Greenfield, Milwaukee county. The soil was clay, with a slight mixture of sand and gravel, to which no manure was applied. It was sown after corn. The ground was plowed in the fall, and again in the spring. The wheat was sown the 13th of May last, and dragged twice. It was cut the 15th of August, and taken into the barn the 17th. I threshed a few bundles for the mill during the first week of September, and had three bushels left, of which this is a part. The remainder of the crop is not yet threshed; I think it will yield between twenty and twenty-five bushels per acre. I weighed one-half bushel by measure, and it weighed by my steel-yards, thirty-three pounds.

"The expense of cultivation is as follows:

Ploughing ground, two acres, with oxen, one and a half days, at fifty cents per day, team and hand	$1 50
Sowing and dragging the same	0 75
Harvesting and taking into barn	3 00
Cost of three bushels for seed, at sixty-two and one-half cents	1 88
Total	$7 13

PETER MARLETT."

Second best sample of spring wheat; Ira Blood, Vernon. American Muck Book.

"This wheat is the variety usually called the 'Canada club.' It was raised on burr-oak land, inclining a little to clay, which had been for the past five years cropped with wheat and corn alternately. Forty loads per acre of common barn yard manure had been applied.

"The ground was plowed once in April last, and wheat sown on the furrows, and then twice harrowed thoroughly, and afterwards rolled. It was injured somewhat by the drought. The expense of cultivation and threshing per acre, was $5.

"The yield per acre was fifteen bushels, weighing sixty-one pounds per bushel.

IRA BLOOD."

Best sample of barley; James T. Walklin, Eagle. American Muck Book, and $1.

"I plow my land in the fall of the year, and sow my grain in the spring, as soon as the frost is out of the ground. The soil is a deep, black, sandy loam, with a clay sub-soil. I manure about ten acres every year, using all the manure made by my stock; the cost of the same being about five dollars per acre, for labor. I also keep a flock of about two hundred sheep, which I pen on my land every night with sheep hurdles. The cultivation of barley costs about six dollars per acre. The yield is twenty-five bushels per acre, weighing fifty pounds to the bushel. The crop I have sold for sixty-two cents per bushel.

JAMES T. WALKLIN."

Best sample of Indian corn; Wm. E. McClure, Ottawa. American Muck Book, and $1.

"In the latter part of May last, I plowed a field of eight acres, upon which my sheep had been pastured for a portion of the previous summer, and the land being well covered with sheep manure—the season being advanced—I thought of planting an early variety of corn, and on this account procured the Ohio flint, or as it is commonly called, the Ohio ten weeks' corn. The corn was planted on the 29th of May, and was harvested the twenty-fourth day of August. This corn is a yellow flint, having from twelve to twenty-four rows in the ear, and growing to a great length. I have in my possession one ear that has upwards of nine hundred grains upon it. The stalks grow tall and thick, the ear being near the ground. The suckers were numerous, and many bore very good ears of corn.

"After plowing, and before planting, the ground was harrowed, and laid out in squares of four feet, at each angle a hill of corn being planted. When the corn was up, the cultivator was used each way, and afterwards it was hoed so as to leave no weeds. About two weeks afterward, I again went through with the same process; and again, after one week, I went through one way with the cultivator, and the other way with the plow, finishing with the hoe. I used no manure except as above stated. There had been one crop of wheat raised upon this field before planting the corn.

"For this crop, I had summer fallowed the land, plowing but once; my preference being for but one plowing for wheat, and that in June, so that it will be well settled down before sowing. Wheat wants a hard bed. At the place where I turn my team at the sides of the land, my wheat is uniformly the best. My reasons for plowing but once are, that the weeds thus turned under are more easily decomposed, and when not disturbed, they make an excellent manure for the succeeding crops, while the vapor escaping from the decaying matter tends greatly to stimulate the growth of the first crop. I turn my sheep on fallow land to keep down any weeds that may spring up. Turning sheep upon land is the best way we have to manure the land without cost.

"The soil of this field is a sandy loam, of rather a dark color. The cost of my crop of corn is as follows:

Plowing the field, one dollar per acre	$8 00
Harrowing, and laying out for planting	2 50
Seed, one and a half bushels	94
Six days work of man and horse	6 00
Hoeing, three times	9 00
Harvesting	3 00
Husking	20 00
Making the total cost of eight acres	$49 44

"The crop produced 496 bushels, at a cost of not quite ten cents per bushel, leaving a nett profit of thirty-eight cents per bushel, or of $188 48 from the eight acres, after delivery in the market, and after deducting railroad transportation, shelling, &c.

"The turnips exhibited by me grew on the same kind of land, producing 641 bushels per acre. The turnips grew on what is called 'potato leavings.' The land never was manured. It was plowed about the 7th of June, then harrowed and drilled. My seed was sown in drills three feet apart, and nine inches space between each seed.

"The cost of production per acre, is as follows:

Plowing, per acre	$1 00
Harrowing and planting	0 75
Working twice with cultivator and once with plow	1 00
Hoeing twice	3 00
Pulling and carting from field	8 00
Making the total cost of one acre	$13 75

"This makes the cost of the turnips something over two cents per bushel. They sold readily in Milwaukee for eighteen three-fourth cents per bushel. Deducting five cents per bushel for delivery and expenses of railroad transportation, and two cents for expenses of cultivation, it would leave a nett profit of eleven three-fourth cents per bushel, or about seventy-two dollars per acre. The turnips were the red-top Swedish, and are the best kind I have yet raised.

William E. McClure."

Best sample of flax seed; John Galbraith, Mukwonego. Diploma.

This flax seed was raised and exhibited by John Galbraith, Esq., Chairman of the Committee of Judges, who, from motives of delicacy, did not enter it for competition. After the close of the Fair, it coming under the observation of the Executive Committee of the Society, by them it was awarded the Diploma of the Society, on account of its superior quality. For a statement of Mr. Galbraith's mode of cultivation, reference is made to Vol. I. of the Transactions of this Society.

Albert C. Ingham,
Corresponding Secretary.

Second best sample of Indian corn; Hiram F. Story, Milwaukee. Transactions.

"This corn was raised on ground which had been cropped but once before (one crop of wheat). The soil being a mixture of clay and black sand. The ground was plowed in the fall, and again in the spring, after which it was harrowed and then the corn planted, which was about the 20th of May. The corn was cultivated once and hoed twice. About the middle of September it was cut and shocked. There has been no manure applied upon the ground. I cannot give you the yield per acre, as I have only husked a small portion of the field.

HIRAM F. STORY."

Best sample of buck wheat; Alanson Pike, Jefferson. American Muck Book, and $1.

"The buck wheat was sown about the middle of July on black, mucky ground, cross plowed; after sprouting, the growth was very large, but early frost damaged the top blades very much. No manure was applied to the ground, and the manner of cultivation does not differ materially from that practised by farmers generally. The cost of cultivation and yield per acre, I am unable to give.

ALANSON PIKE."

Second best sample of buck wheat; Ira Blood, Vernon. Transactions.

"This buck wheat was sown upon rich prairie soil, composed of rich, dark loam with an even proportion of decomposed vegetable matter. The land had been cultivated six years, during which time no manure has been applied. It was ploughed once in June, and the seed was sown upon the furrows, and afterwards twice thoroughly dragged. The crop was injured somewhat by dry weather. The cost of cultivation and harvesting per acre was four dollars. The yield per acre was fourteen bushels, weighing fifty pounds to the bushel.

IRA BLOOD."

Best sample of hops; James Weaver, Waukesha. American Muck Book, and $1.

Second best sample of hops; J. F. Antisdel, Janesville. Transactions.

"For raising hops, I prepare the ground in the same manner as for the cultivation of corn. Marking the furrows four feet apart each way. I plant alternate rows of corn, and in the remaining rows I plant alternately corn and hops, which leaves the hop plants eight feet distant from each other each way. In this way I get three-fourths of a full crop of corn the first year. I weed the hops and cultivate the corn. In the fall, before the ground freezes, I put two shovels full of well rotted manure in each hill. This manure is taken off in the spring, before the hops start, and the poles set immediately. Two poles are set in each hill, and two vines trained to each pole, the rest of the vines are kept trimmed down. The ground should be well cultivated, the weeds kept out, and the time of the last hoeing should be about the time the vines are in blossom, the hops should be well hilled. Before frost comes they should be picked, and afterwards they should be well kiln dried.

"My ground is a sandy loam, low but not wet. The yield is about five hundred pounds to the acre, first crop. The cost of cultivation is about twice that of corn. J. F. Antisdel."

Best sample of timothy seed; Alanson Pike, Jefferson. Transactions, and $1.

"This timothy seed was cut from last year's seeding, on what is called low prairie. Five bushels of seed were raised from half an acre. It was cradled and bleached in the dew for a time, then raked, bound and drawn into the barn, where it was threshed and cleaned with a fanning mill. Alanson Pike."

Second best sample of timothy seed; Ira Blood, Vernon. $2.

"This timothy seed was raised on prairie soil, of dark loam mixed with a large proportion of decomposed vegetable matter. The land had been cultivated two years, no manure having been applied to it. The timothy seed was sown in the spring of 1851, with oats. Cost of cultivation and harvesting per acre, was three dollars. The yield per acre was seven bushels. Ira Blood."

Best sample of crops cultivated and raised on any one farm; Ira Blood, Vernon. Bronze medal.

Second best sample of crops cultivated and raised on any one farm; George O. Tiffany, Milwaukee. American Farm Book.

Best clover seed; E. W. Edgerton, Summit. American Muck Book and $1.

Letter from Mr. Edgerton.

"Summit, December 30th, 1852.

"My Dear Sir:—Yours of the 21st inst., containing many interrogations, as to our experience and success with the cultivated grasses in this State, was duly received, and I take great pleasure in responding to your inquiries, hoping that our experience may do something towards correcting the general though erroneous impression, that 'the cultivated grasses do not succeed well in Wisconsin.'

"From remarks made by many Eastern farmers with whom I have conversed during the past and present years, I am confident that nothing has operated more to the prejudice of this State than has this mistaken idea, deterring, as it does, many of the better class of farmers at the East, and dairymen in particular, from emigrating to this State.

"From my own practical experience, and from the experience of others, I am satisfied that the difficulty has arisen, not so much from any defect in our soil and climate, as in the system of husbandry practised by too many of our farmers. Through a mistaken economy, many of them have thought that by no possibility could their land be spared from active and exhausting cropping, and a portion of it set aside for the purpose of stocking it with grass. This course has often been pursued until the land has become covered with pigeon-grass, cow-tail and other noxious weeds; and then, when they can no longer succeed in raising grain from the much abused field, they have resorted to timothy and clover in order to 'bring the land to,' as they term it, and not with any thought of getting a good crop of hay. 'Oh no,' say they, 'we have plenty of marsh from which to cut grass, without having our good land lie idle, and we have seeded this down merely to give it rest.' Carrying out this idea, they have procured a barrel of timothy seed or clover, and this quantity must perforce be amply sufficient to sow ten or twelve acres! With autumn, comes their disappointment and chagrin at seeing a few stalks of clover and timothy scattered amid a wilderness of weeds.

"Another mistaken idea is prevalent among our farmers, and that is, that 'Wisconsin land will never wear out.' I know of no latitude where the following extract from an humorous communication published by Solon Robinson, of Indiana, in 1838, will apply more forcibly than it does here. In conversation with his neighbor upon the subject of farming in America, he says: 'Squire, though our people don't seem to be sensible of it, and you and I may not live to see it, yet, if this awful robbin' of posterity goes on for another hundred years, as it has for the last, among the farmers, we'll be a nation of paupers! Talk of the Legislature doing something! I'll tell you what I'd have them do: paint a great parcel of guide-boards, and nail 'em up over every state-house, church and school-house door in America, with these words on 'em in great letters: '*the best land in America, by constant cropping without manure, will run out!*' And I'd also have 'em provide means to learn every child how to read it, 'cause it's no use to try to larn the old ones, they are so sot in their ways!' And if our Wisconsin farmers continue in this 'constant cropping' system, and continue to burn their piles of straw, and to move their barns, in order to get away from the piles of manure constantly accumulating about them, we certainly shall do our share, and that soon, towards becoming 'a nation of paupers.'

"I will now proceed to answer your questions. Our farm contains 830 acres, of which 600 acres are under cultivation. The cultivated portion is mostly burr-oak openings, The soil is a sandy loam, based on a clayey subsoil. We have about 500 acres stocked down, of which about sixty-five acres are of clover, the remainder being timothy. We mowed about ninety acres for hay during the season just past. The average yield of the timothy was one ton per acre; the season being very dry, the crop was lighter than usual—one and one-half tons per acre being near the usual crop on the natural soil. Lands that are well manured will average two tons per acre. Our clover crop the past season, where we mowed forty acres, gave an average of one and one-half tons of hay per acre. The second crop would have made a ton of hay per acre, but we preferred to save it for seed. Our experience in raising timothy seed is limited, as we have given our attention mostly to clover, thinking that it pays much the best.

"You inquire what is the usual profit realized from an acre of clover? In answer I will give you our experience for the last year, and then you can judge for yourself. The receipts were:

First crop, 60 tons hay, $5 per ton	$300 00
Second crop, 123 bushels first quality seed, at $7 . .	861 00
Second crop, 6 bushels second quality seed, at $3 . .	18 00
Total . .	$1179 00

"The expense of raising the same was:

Cost of hay crop, including board	$55 00	
Seed	130 00	
5 bbls. plaster, at $1,50	7 50	
Freight and sowing same	3 00	
		195 50
Showing a nett profit on forty acres of . .		$983 50

"This shows an average profit of $24,58 per acre. We prefer the June clover to the larger variety, because it will yield more and better hay, and give more seed to the acre. We consider three bushels per acre as an average crop of seed—four or five bushels are not uncommon —and I have heard, from good authority, of six acres of land in this State, producing forty-two bushels of clean seed.

"We clean our seed by horse power. Three men, with Emery's two horse power, will hull from twenty-five to thirty bushels per day. It would require two men, about the same length of time to clean it through a fanning mill. The cost of a huller is forty-five dollars. The cost of a huller and cleaner, is about eighty dollars, being much the best, as it will save the labor of two men in cleaning, and it can be driven by the same power, and will do the same amount of work as the huller alone.

"We use for seed, when we stock with clover alone, eight quarts per acre; when we stock with timothy and clover, we use eight quarts of timothy and four quarts of clover.

"We consider the autumn of the year as the best time to stock down land. The land should be harrowed after sowing, and should be used as a pasture the following spring. We have used both the New York and Michigan plaster, and have become satisfied that the Michigan plaster is much the best for Wisconsin soils. We used half a bushel per acre of Michigan plaster, upon a part of our clover field during the past season, and were satisfied that it doubled the crop of hay, and added one-third to the crop of seed. We used the same amount of New York plaster per acre in the same field, and could discover no beneficial effects from it.

"Were a comparison to be instituted between Wisconsin, New York, Ohio, Michigan and Illinois, I am well satisfied that in Wisconsin as much hay can be raised, and as many sheep, cattle, or horses, can be pastured upon an acre as can be done in either of the other named States, the same kind of cultivation, of course, being given.

Yours truly,

E. W. Edgerton."

To Albert C. Ingham, Esq.,
Sec. of the Wis. State Agr. Society.

The Committee in their report say, "The show of grain samples was very limited, but the quality was in general good, as was to be expected of the present season's crops, though on some of the articles we have given no awards, owing to the absence of competition, or ordinary quality of the article exhibited. Though a considerable quantity of rye and flax-seed was raised in the State this season, none of the former was shown, and only one sample of the latter, not entered for competition.

"There was nothing in our department requiring special mention, except one bushel of clover seed, for which article no premium was offered by the Society. The sample was of very fine quality, and in view of this description of seed becoming of much importance to the agricultural interests of the State, we would beg leave to suggest to the Executive Committee the propriety of bestowing some suitable mark of encouragement. (This recommendation has been complied with. A. C. I.)

"There were two competitors for the prize offered by the Society for 'Sample of crops raised on one farm,' exhibited on a waggon, whose tasteful arrangement and variety of articles must have attracted the attention of most persons on the grounds. Both exhibitors have well earned the premiums awarded by the Society, for the abundant proofs they have given of what can be done on a Wisconsin farm by taste and good management.

"Some very excellent specimens of Wisconsin tobacco, of different sorts, were exhibited by the producers, but not offered for premium. The growth and curing seemed perfect, and reflect much credit on the enterprizing pioneers in this important branch of agriculture. These samples leave no doubt of the capability of Wisconsin in soil and climate for the culture of tobacco.

"The hops exhibited were of excellent quality, giving every promise of encouragement for an extensive culture of the article."

VEGETABLES.—No. of Entries, 83.

Judges.—Andrew S. Fuller, Wauwatosa; Benjamin Nute, Milford; S. C. West, Milwaukee.

Best twelve turnips; Wm. E. McClure, Ottawa. $1.

Best twelve carrots; D. A. Putney, Waukesha. $1.

Best twelve beets; Lester H. Cotton, Milwaukee. $1.

Best twelve parsnips; George Sercomb, Wauwatosa. $1.

Best six heads of cabbage; John Becker, Milwaukee. $1.

Best twelve tomatoes ; D. A. Putney, Waukesha. $1.

Best half peck of beans ; H. V. Prentice, Genesee. $1.

Largest pumpkin ; George Sercomb, Wauwatosa. $1.

Best peck of potatoes ; R. W. Parker, Wauwatosa. $1.

Best and greatest variety of vegetables raised by exhibitor ; George Sercomb, Wauwatosa. American Farm Book.

Best mangel wurtzel beets ; H. V. Prentiss, Genesee. Norton's Elements of Agriculture.

Best cucumbers ; George Sercomb, Wauwatosa. Transactions.

Superior specimens of new seedling potatoes ; George P. Pfeffer, Pewaukee. Transactions.

Fine egg plants ; R. N. Messenger, Milwaukee. Norton's Elements of Agriculture.

Best pie plant ; B. P. Cahoon, Kenosha. Norton's Elements of Agriculture.

George P. Pfeffer, of Pewaukee, also exhibited a new variety of pea, which he calls the "Black Winter Pea." He remarks concerning it as follows :

"The Black Winter Pea was originated by myself, and is a native, or partly so, at least, of Wisconsin. Two years since, having some small nursing trees planted in rows four feet distant from each other, I filled the spaces between the rows with peas and beans. In one of the spaces, by chance, a vine of the common wild pea had grown, and immediately adjacent to this vine I planted one of the common marrowfat peas, and also a black bean, in shape similar to a kernel of corn. As the vines grew, I placed about them stakes and hoops, so that they were kept in close proximity. On gathering the seed when ripe, I found one pod of a dark green color, containing seven peas also of a dark green color, but with black stripes upon them. These peas I preserved, and planted in May of last year. They grew well, but showed no blossoms until September, after which pods were formed, and the peas ripened. In November, I collected one quart of ripe seed from the vines, and also one quart of green peas, which, after cooking, I found in all respects equal to the earlier varieties. The stocks did not ripen, but were in bloom when the cold weather came. This year I planted one pint of the seed, and the vines are at this time (October 8, 1852,) in blossom, and setting pods rapidly, notwithstanding the heavy frosts we have had. This variety is very prolific."

DOMESTIC MANUFACTURES.—No. of Entries, 25.

Judges.—Stephen O. Bennett, Thompsonville; Champion S. Chase, Racine; Thomas R. Mott, Watertown; Mrs. Francis Randall, Milwaukee; Mrs. Anson H. Taylor, Muskego Centre.

Best ten yards of flannel; H. B. Burritt, Muskego. Bronze medal.

Best ten yards of woolen carpet; Garret Vliet, Milwaukee. Bronze medal.

Best hearth rug; Miss Lydia D. Ely, Milwaukee. Bronze medal.

Best ten yards rag carpet; Mrs. Eleanor Kinney, Whitewater. Bronze medal.

Best pair woolen stockings; Mrs. A. H. Taylor, Muskego Centre. Transactions.

Best pair woolen mittens; Mrs. David Williams, Geneva. Transactions.

Best pair cotton stockings; Mrs. B. Coates, Spring Prairie. Transactions.

Best woolen yarn; Mrs. A. Smith, Troy. Transactions.

NEEDLE, SHELL, AND WAX WORK.—No. of Entries, 87.

Judges.—Charles Holt, Janesville; Mrs. John Catlin, Madison; Mrs. F. J. Blair, Milwaukee.

Best Ottoman cover; Miss Lydia D. Ely, Milwaukee. Transactions.

Best fancy chair work with needle; Mrs. Alexander Mitchell, Milwaukee. Diploma.

Best worked collar and handkerchief; Miss Mary Frances Smith, Milwaukee. Transactions.

Best worked quilt; Garret Vliet, Milwaukee. Transactions.

Best white quilt; Mrs. J. B. Selby, Milwaukee. Transactions.

Best portfolios worked; Miss M. Cecilia Smith, Milwaukee. American Bee Keeper.

Best ornamental shell work; J. W. Vail, Milwaukee. Transactions.

Best specimens of wax flowers; Miss Mary Ann Cowan, Milwaukee. Transactions.

Best embroidered handkerchief; Miss Elizabeth S. Bosworth, Milwaukee. Transactions.

Best lace cape; Miss Elizabeth S. Bosworth, Milwaukee. Norton's Elements of Agriculture.

Embroidered tidy; Miss A. E. Stone, Milwaukee. Transactions.

Patch work chair cushion; Mrs. J. H. Crampton, Milwaukee. Transactions.

Crochet reticule; Miss Lizzie H. Crampton, Milwaukee. Norton's Elements of Agriculture.

Crochet purse; Mrs. Benjamin McVickar, Milwaukee. Transactions.

Basket of wax fruit; J. S. Douglas, M. D., Milwaukee. Transactions.

Embroidered dress pattern; Miss Harriet E. Hatch, Milwaukee. Diploma.

Knit coverlet; Mrs. Martha Brown, Madison. Rural Architecture.

Pebble frame; Mrs. T. M. Wilcox, Port Washington. Transactions.

The Committee in their report speak highly of the general merits of the contributions in their department, and noticed several articles as possessing positive superiority.

Their decisions were in many cases made with extreme difficulty, owing to the uniform high character of the articles coming in competition.

FRUIT.—No. of Entries, 92.

Judges.—Francis R. Elliott, Cleveland, O.; Dr. John A. Kennicott, Northfield, Ill.; W. S. Rice, Racine.

APPLES.

Largest number of varieties of good apples; Franklin K. Phœnix, Delavan. Silver medal.

VARIETIES EXHIBITED.

Roseau, Surprise, Flushing Spitzenberg, Pomme Gris, Autumn Strawberry, Fameuse, Saint Lawrence, Fall Orange, Yellow Ingestrie, Bailey Sweet, Pomeroy Sweet, Seek-no-further, English Golden Russet, Dunelow's Seedling, White Seek-no-further, R. I. Greening, Vandervere, Tolman Sweet, Rambo, Montrose Pippin, Green Everlasting, Limber-twig, Red Romanite, Winter Pearmain, Swaar, Virginia Blush, Pound Sweet or Lyman's Pumpkin, Sweet of Books, Large Yellow Siberian Crab, Siberian Crab, Fall Sweet, Nameless Winter Sweet obtained for Talman Sweet, Lane Sweet, Royal Pearmain, Redling, Spice Sweet, Detroit Red, Hodge's Black, Golden Sweet, Barnhill, Yellow Bellflower, Cheeseboro' Russet, Pownal Spitzenburg, Michael Henry Pippin, Tift Sweet, Spurious Drap D'Or, Camburnathan Pippin, Peach Apple, Pen-nock, Hawthornden, Sack and Sugar, Domine.

"My apple trees are generally root grafts, planted on poor, heavy land, sloping north and south, and originally covered with scattering burr and yellow (or jack) oak. The bearing trees were mostly of three seasons growth, some four or five, when planted. Thirty in the spring of 1844, and seventy the spring following, several of which havng failed in transplanting, or in consequence of accidents, injuries in winter, &c., have been replaced at different times.

"Since planting, the trees have been well cultivated by frequently stir-ring the ground as among corn, washing the bodies in the spring with soft soap and strong suds, waxing over bruises or large wounds as in trimming, and for several years, while the trees were young, a mound of earth about a foot high was heaped around the base late in the fall, and removed in the spring.

"Most of the trees have been manured as often as once in two or three years. At pruning very little has been done since the tops were formed. In regard to that most important consideration, the bearing of an or-chard; it is unquestionably true, that for some reason many sorts at the West are generally not as productive at a given age and size as at the East, or as other kinds.

"In the opinion of some, no kinds bear as early and as well here as in the Eastern States; but in my opinion this is entirely a mistake, although there are doubtless particular cases that would seem to warrant such an idea. Thus, there are some kinds that are naturally late in coming into bearing; some doubtless made so, by being worked from nursery trees many removes from bearing trees; and others in conse-quence of the soil on which they are planted—low, rich, prairie soils being inclined (with trees as with other crops) to produce an excess of leaves and woody matter.

"A few trees in my orchard commenced bearing a very little the next year after planting. Two or three years since, there were perhaps five bushels each year—last year fifteen—this year twenty-five; and had it not been for late frosts, and a severe hail storm about the first of June, there would doubtless have been twice or thrice that quantity.

"The orchard contains, perhaps, one hundred trees, with tops from six to fifteen feet across; and as to bearing this season, might be classed thus—twenty bearing well, or tolerably, which, therefore, judging from this one experiment, ought to stand late frosts well, among which I would mention Fameuse, English Golden Russet, White Seek-no-further (so called) Dumelow's Seedling, Green Everlasting, R. I. Greening, Vandervere, Pomeroy Sweet, a small round striped Sept. and Oct. Sweet. Twenty five bearing a little, a part tolerably full last season, and a part for the first time, which latter class ought also to be good against late frosts; of this description, I would name Fall Orange, Westfield Seek-no-further, Monstrous Pippin. Fifteen bore considerably last season, and but very few this, though some bloomed well. The remaining forty must be considered unproductive as yet, though many have produced perhaps one or two specimens. These trees will probably average quite as large as any class, and might have generally come into bearing this season but for the frosts, as they mostly bloomed in the spring. Of these I would name as apparently among the most tardy, Summer Queen, Newtown Pippin, Golden Sweet, Northern Spy, Yellow Bellflower, Campfield Sweet, Colvert, Baldwin, Sweet Bough.

"In regard simply to the bearing of root grafts *vs.* stock grafts, which is a point that is being very generally discussed, I would here give my orchard experience.

"Among the hundred trees of bearing size are sixteen, or about one in six budded or grafted on the stock at different heights—one Rambo, near the ground—one R. I. Greening, at standard height—three grafted in the tops to sundry sorts, and the remainder in the stock, mostly two or three feet high. Of these sixteen, none have borne much save the R. I. Greening, at standard height, and one "Sundry Sort" tree; but all have borne a little, more or less, except one Sundry Sort tree, one Golden Sweet, two (called) Striped Pippin, and one Northern Spy.

"The whole list is as follows: One each—Golden Sweet, Tift Sweet, Detroit Red, Sops of Wine. Two each—Rambo, R. I. Greening, Striped Pippin, Virginia Blush, three Sundry Sorts, one Northern Spy.

"In looking the whole over, I may say without further detail, that it would seem, judging from this orchard alone, as if, with given *hardy sorts*, nothing were gained in productivenes by stock grafting, and I earnestly hope it will finally prove out so on account of some desirable objects that can best be subserved by root grafting. Unquestionably, however, this trial is as yet too limited in time and variety to afford a good criterion on this point.

"In regard to another disputed point—grafting from nursery trees or bearing trees—although I cannot be positive about the origin of most of my bearing trees, having purchased them at nurseries, yet I have every reason to suppose, that most were worked from nursery trees. A part, however, were raised by myself from bearing trees, and though there is some difference in favor of this latter class, yet there is not so much as between certain families or varieties—some being inclined to bear with one much younger than others. Some of the tardy bearers having already been mentioned, I will name some of them: Dumelow's Seedling, Roseau, Fameuse, White Seek-no-further, Tolman Sweet, Pomme Gris, Early Harvest, Winter Pearmain, English Golden Russet, Spice Sweet, Autumn Strawberry, Datchess of Oldenburg.

F. K. Phœnix."

Second largest number of varieties of good apples; John Bell, Gardner's Prairie. Barry's Fruit Garden.

Varieties Exhibited.

Golden Russet.	Black Gilliflower.	Seek-no-further.
Winter Russet.	Rambo.	20 oz. Pippin.
Cheesebro' Russet.	Romanite.	Monstrous Pippin.
Roxbury Russet.	Fameuse.	Swaar Winter.
Boston Russet.	R. I. Greening.	Fall Wine.
Pomme Gris.	Sweet Greening.	Colvert.
Steele's Red Winter.	Sweet and Sour.	Pomme Roi.
Red Baldwin.	Ortley Pippin.	Wellington.
Spice Sweeting.	Black Apple.	Queen Anne.
Green Sweeting.	Surprise.	Ponnel Spitzenburgh.
Tolman Sweeting.	Newtown Pippin.	Red Siberian Crab.
Yellow Bellefleur.	Munche's Crab.	Golden Beauty Crab
Cornish Gilliflower.	Green Everlasting.	of Canada.

"The soil upon which these apples were grown is a prairie loam, slightly mixed with sand. The seed was sown twelve years ago this fall. I grafted them in the root ten years ago last spring. I planted them in the orchard eight years ago. Three years ago I put about a bushel of ashes around each tree, which is all the manure they ever had; at the same time they were washed with soap suds.

JOHN BELL."

Third largest number of varieties of good apples; Orra Martin, Spring Prairie. $3.

VARIETIES EXHIBITED.

Summer.	Queen Ann.
Spurr or Spice Sweeting.	Winter.
Autumn.	Sweet Greening.
Wine.	Red Baldwin.
Rambo.	Yellow Bellefleur.
Early Winter.	Late Winter.
Red, or Cornish Gilliflower.	Martin's Russet.
Green Newtown Pippin.	Boston Russet.
Rock (the real name is lost.)	Seedling (a winter apple.)
Fameuse.	

"The trees, bearing the above named apples, grew upon a south-eastern declivity. The soil a dark loam, nearly the same as the adjacent prairie, on a limestone subsoil. The ground is annually cultivated in corn, potatoes, or ruta bagas, with occasionally a light dressing of manure, and the body of the trees washed one or more times with soap suds during the season.

ORRA MARTIN."

For the best six varieties of good apples; Anson H. Taylor, Muskego. Bronze Medal.

VARIETIES EXHIBITED.

R. I. Greening.	Swaar.	Tolman Sweeting.
Roxbury Russet.	Fall Pippin.	Rambo.
Straat.	Seek-no-further.	Colvert.

"The orchard from which the above named apples were gathered was planted in the years 1845 and 1846. The holes for the trees were dug about three feet in diameter, and deeper than the roots required to set them out. The trees were set in top-soil earth, with a coat of well rotted manure on top, and set so as to designate each kind. The ground has been cultivated each year, and manured to some extent.

A. H. Taylor."

For the best three varieties of good apples ; Cyrus Hawley, Milwaukee. Downing's fruits.

Varieties Exhibited.

Fall Pippin.	Belmont.	Esopus Spitzenberg.

"The soil of my apple orchard is a clayey loam. It has received only the ordinary cultivation for root crops, which crops are usually planted in it, with a yearly dressing of about fifteen loads per acre of barn-yard manure, spread broadcast and plowed in. I usually wash the trunks of my trees in the spring with thin, soft soap.

C. Hawley."

PEARS.

For the largest number of varieties of good pears ; John B. Dousman, M. D., Milwaukee. Bronze medal.

PLUMS.

For the best exhibition of good plums ; George P. Pfeffer, Pewaukee. Thomas' Fruits.

Varieties Exhibited.

Yellow Egg.	Yellow Gage.	Coe's Golden Drop.
Dean's Purple.	Green Gage.	Damson.
Purple Gage.	Red Egg.	Bleecker Red.
Imperial Gage.	Royal Prince.	

"These plums were raised from grafts upon wild plum stocks. The grafts, though but three years since their setting, have proved themselves excellent bearers. I also present for exhibition, the plum weevil or curculio. My own experience with this insect is, that it attacks the plum from the beginning of June until the second week in July. About four weeks after the attack, the plum falls to the ground, when the grub either remains in the plum or enters the soil. In the month of September, it again emerges as the curculio, and attacks the small shoots of the season's growth, depositing in them its eggs. These in the spring hatch again into the weevil, and eat the centre of the buds then just shooting, thus destroying the grafts and young trees. When in this stage it has reached the length of three-eighths of an inch, it again falls to the ground, to emerge in time to attack the plums.

"This statement varies much from the description given by most Horticultural writers; but I have long observed its habits, and that, too, very closely, as without great care and precaution I should every year lose my plums entirely. I also present for exhibition a branch cut from one of my trees, showing the eggs deposited by the insect.

GEORGE P. PFEFFER."

Second best exhibition of good plums; Cyrus Hawley, Milwaukee. Transactions.

"These plums are Coe's Golden Drop. The tree upon which they grew was planted in its present location in the year 1848, at which time the trunk was about two inches in diameter. The soil is a stiff clay. For planting the tree, a hole was dug four feet in diameter, and two feet deep, and filled up with a compost of two-thirds muck, and one-third of well rotted manure, to which six shovels full of leached ashes were added. It has received no cultivation since, except last autumn, when a dressing of well rotted manure was applied about the roots. This tree has almost entirely escaped the attack of the curculio, while I have lost the entire crop of some other varieties in my garden, such as Knight's Green Drying, Huling's Superb, &c. The Jefferson growing in the same garden was not attacked at all, and the Imperial Gage but slightly.

CYRUS HAWLEY."

Third best exhibition of good plums; Alfred L. Castleman, M. D., Delafield. $1.

"These Autumn Gage Plums were gathered from two trees, one growing in a garden walk, and the other in a deep, rich bed of asparagus. I see no difference in the fruit of the two trees, except that the tree in the asparagus bed has borne nearly three times the amount borne by the other.

ALFRED L. CASTLEMAN."

GRAPES.

For the best exhibition of good grapes; E. S. Turner, Grafton. Thomas' Fruits.

For the second best exhibition of good grapes; Wm. Le Fevre, Lake. Transactions.

For the third best exhibition of good grapes ; B. P. Cahoon, Kenosha. $1.

MELONS.

For the best specimens of any variety of water melons ; Mrs. E. W. Edgerton, Summit. $1.

Same ; Hiram E. Coon, Palmyra. $1.

Same ; Daniel F. Melendy, Eagle. $1.

Alpine strawberries ; John F. Welkie, Milwaukee. Transactions.

Four jars of preserved plums ; George P. Pfeffer, Pewaukie. Transactions.

Best quinces ; P. B. Hill, Milwaukee. Transactions.

The Committee in their report say, that "aware of the youth of the State, and of the few advantages which the cultivators of the soil had enjoyed, as compared with residents of more Eastern States, we did not anticipate very laborious duties, or much gratification, in performing the work assigned us. Judge, then, of our surprise, when on entering the hall devoted to Flora and Pomona, we found a long and imposing array of ripe and glowing fruits, bearing, in their size and smooth glossy surfaces, mingled with tints of red and yellow, distinct impress of the great and glorious West, where nature has been so lavish in her gifts.

"Guided by instructions from the proper officers of the Society, we commenced our labors, first, by carefully examining all collections, and noting wherein we regarded them as having been grown with the attention and judgment of intelligent beings, whose minds had been not only turned to the production of a beautiful fruit, but also to the knowledge of its true name, according to standard works on Pomology. And lest we may be accused of any unfairness, we beg leave here to state, that we did not feel at liberty to change the names of fruits from what they were called when presented to us—although repeatedly asked by exhibitors to correct errors where we were satisfied of them. Our decisions, it will be understood, were therefore made upon the fruits as named and exhibited by the growers, although we were fully of the impression, that had a Committee been appointed, whose duty it was to precede your reporters, and examine, classify, and correct nomenclature in fruits, far more good would have resulted from the exhibition, as well as lessened labors, which become, from year to year, more arduous and imposing on Committees appointed to examine this department. A department embraced and supported by wise and discriminating bodies, viewing the products of the agriculturist in a sense relating both to the advantages of his social and moral life.

"APPLES being first on our lists for awards, and also most prominent on the tables before us, we proceeded in our duties, often remarking upon the beauty of specimens, exhibiting strongly the adaptation of both soil and climate for the production of fine fruits, and again, often remarking upon the universal love every man who owns an acre of ground has for the production of fruits on his own lands, as well as the desire already general, to produce only those most acceptable, and ministering in the highest degree to his tastes; these tastes, be it understood, varying only as opportunity and advantages have been enjoyed for their formation.

"After carefully examining a large number of seedling apples exhibited in various collections, your Committee could not discover one which, ripening at the same time with the varieties already known and described, possessed merit sufficient to warrant them in awarding the premium.

"In connection with this part of our report, your Committee desire to enumerate *some* of the varieties of apples which appeared best adapted to the soil and climate of the State, viz: Fall Wine, Rambo, Fall Pippin, Swaar, Roxbury Russet, Rhode Island Greening, Belmont, Esopus Spitzenberg, Westfield Seek-no-further.

"Of our awards, next in order come PEARS; and after carefully examining the long tables of fruits, and noting how perfectly grown were the few specimens in each exhibitor's collection, we could but regret that more care and thought had not been given to the growth of this prince of all fruits; for while nearly every exhibitor had one or more specimens of one variety beautifully grown, we could not make up collections enabling us to award more than one premium.

"With the schedule of awards for PEACHES, your Committee could only read, and lament the lateness of the season, which precluded both the enjoyment of eating a ripe and luscious peach, blooming with the freshness of a new and provident land, and the pleasure it would have given them to have distributed the largess offered by your Honorable Society to the man who should have produced, in the 'Far West,' a fruit rivalling any grown in warmer, longer inhabited, and more favored sections.

"PLUMS.—Here, one of us—he of the East, where every plum grown is attended with so much labor and trouble to protect it from the curculio, that they may be said to cost a dollar each—could but express the utmost satisfaction; and here permit the remark, as coming from that Eastern man, that not only on the tables of this Society's exhibition, but in various gardens where he had an opportunity of examining the plum tree in bearing, he saw evidence of the same successful result in the growing of this fruit, free from the stings of the curculio, which has attended one other section of the United States only. Evidence that while it is hardy as a tree in the climate, the fruit will be one of exceeding pecuniary profit to the orchardist.

"Every variety of this fruit exhibited seemed to have been grown in the greatest perfection, and in calling to it the attention of planters, we desire to name the McLaughlin, Jefferson, Golden Drop, Purple Favorite, Bleecker's Gage, Hudson Gage, as among varieties that will produce fruit of the best and most desirable qualities for all purposes, except that of drying; and for this latter, no better may perhaps be named than "St. Martin's Quetoche." Many other varieties could undoubtedly be named, but a report like this will not perhaps be thought suitable as a place for an extended record.

"GRAPES, being next in our schedule, we looked about us expecting in this fruit to see only some imperfectly matured berries, but we were doomed to disappointment, for we had for examination large dishes of heavy bunches and berries of the Isabella, Catawba and Clinton varieties. As a whole, the Isabellas were best ripened, giving evidence that for most parts of Wisconsin, it is the variety best suited for cultivation.

"QUINCES.—The apple-shaped, or orange variety, competed only with numerous seedlings closely resembling it, but such seedlings rarely possessing all the good qualities of the parent, we awarded but one premiun. And here let us remark, that the Portugal Quince, if it can be obtained *true*, will generally ripen better, and cook more delicate and tender than the orange. The latter, however, is generally gathered long before it is ripe; and when so gathered, it cannot be made to cook tender. Usually, it should not be gathered earlier than from the 20th of October to the first of November; as a good, sharp frost or two does not injure it.

"MELONS.—With this part of our duties, your Committee must be excused if they should 'speak right out,' for after carefully examining the heaps of melons, we marched off with the best we could select, anticipating much enjoyment both to ourselves and a few 'invited guests,' while we discussed the merits of the various specimens toward the forming of this our report. Well, after obtaining plates, knives, &c., and after all our friends had gathered around, anxiously expecting a rich treat, we slashed away with a fine looking, large so called 'Black Spanish Watermelon.' On opening its flesh to the gaze of our judges, judge of our discomfiture, for we saw that the grower had selected it from his bed of pumpkins. Thinking, however, that having tasted of so many fruits, our appetite might be somewhat cloyed, we tried to get some of the anxious expectants surrounding us to decide impartially; but one taste was sufficient—none were favorable to a cross of pumpkin or squash, in what purported outwardly to be a delicious melon. We tried another, and another, all to no purpose; and our 'invited guests' having all retired, we wrote down a joint premium for specimens embracing fine size, but which had evidently been grown too near beds of squash or pumpkins. Not less than fifty feet should ever mark the space between the melon and those of any similar class of vines.

"Good taste in the arrangement of fruits for exhibition, contributing largely to the interest which such displays are intended to create, your Committee were gratified in finding a premium offered for the best arranged collection. Looking over the collections, we could but feel aware that many had overstepped the very object they sought to gain, in arranging their fruits; *i. e.*, by so arranging in masses of disorder and in closed cases, beyond the vision of but few visitors, and the reach of your Committee when making their examinations.

"Having now made our report, permit us to say a few words to the growers and exhibitors of fruits in the flourishing and rapidly growing State of Wisconsin, relative to gathering for, transporting, and the exhibition of their fruits at any succeeding exhibition of a similar character. In the good appearance of samples offered, you may sometimes win the prize over fruits of the same quality as your own. In gathering these, pick carefully by hand from the tree; avoid rubbing the fruit, for many varieties have a bloom by which they are at once readily distinguished, but without such natural bloom, or down as it is sometimes called, they are at times difficult to be distinguished, unless by one readily conversant with the variety. Second—in carrying to the place of exhibition, cotton wadding is the best for enwrapping them ; above all, avoid packing in saw dust, mouldy hay, or a pine box, for the fruit of a delicate texture immediately receives, through its pores, the flavor of the said hay or pine. Third—in arranging for show, select, as far as possible, the varieties, and place them in the order of their ripening, viz : first, the early or summer ripening ; next, the autumn ; then, the early winter, and on to the longest keepers. Have plates, if possible, of size, just so that your specimens will cover it, placing one variety only on a plate ; then arrange, in connection with the season, as far as possible, your dark-colored or red fruits at the back of your shelves, placing the light yellow and summer fruits in front ; this serves both to aid the judges, and attract the attention of visitors.

" Trusting that while we have, in a rapid way, written out the results of our notes made on 'examination day,' we have not overstepped the limits of courtesy, while wishing to aid the cause of Horticulture, as connected by an enlightened Society with its handmaid and sister, Agriculture, we respectfully submit these remarks."

FLOWERS.—No. of Entries, 45.

Judges—John A. Kennicott, M. D., The Grove, Ill. ; Mrs. Sarah F. Dean, Madison ; Miss Mary B. Rice, Racine.

DAHLIAS.

Greatest variety ; B. P. Cahoon, Kenosha. Bronze medal.

Best twelve, dissimilar blooms ; B. P. Cahoon, Kenosha. Transactions.

ROSES.

Best six dissimilar blooms ; R. N. Messinger, Milwaukee. Johnston's Practical Agriculture.

PHLOXES.

Best six varieties ; Thomas Hislop, Milwaukee. Bronze medal.

VERBENAS.

Greatest variety ; B. P. Cahoon, Kenosha. Bronze medal.

Best six varieties ; Thomas Hislop, Milwaukee. Johnston's Practical Agriculture.

GERMAN ASTERS.

Best collection ; R. N. Messinger, Milwaukee. Bronze medal.

PANSIES.

Best and greatest variety ; B. P. Cahoon, Kenosha. Bronze medal.

Best six varieties ; R. N. Messenger, Milwaukee. Fessenden's Complete Farmer and Gardener.

Best collection of green-house plants owned by one person ; R. N. Messinger, Milwaukee. Bronze medal.

Best basket boquet, with handle ; Miss E. Ogden, Milwaukee. Bronze medal.

Tree Cactus ; H. W. Hayes, Palmyra. Transactions.

The Committee report "that they have performed their duties with as much care as the great press of spectators on the day to which examinations were deferred, would permit ; and, in common with the multitude of visitors, at this the Second Annual State Fair of your noble Society, your Committee cannot refrain from expressions of regret, that in the delightful department assigned to them, so little emulation has been awakened, especially among the amateur Florists of Milwaukee and its vicinity.

"The cultivation of ornamental plants and beautiful flowers, is a highly useful as well as pleasurable employment of the leisure hours of the denizens of cities—both male and female—for that which we aid in calling into being, or nourishing into beauty and excellence, we instinctively love ; and the love of the beautiful refines and purifies the mind, and adds to the capacity for the enjoyment of innocent and rational pleasures, exactly in proportion to the increasing satisfaction derived from each new experiment, and every successful result of our heart-felt labors in this department of the poetry of rural life. One who loves flowers, and cultivates them because he loves them, cannot be a bad man, and the person who rears them for profit only, is always made better and happier by his humanizing profession. These are truths that few will gainsay, and none can disprove. We, who have seen, know it. You, who would prove, have but to try it.

"Horticulture is the religion of nature, as well as the 'poetry of rural life ;' and it is the duty, therefore, of every one to practise it in cities, where little of nature is seen ; and in towns, near which great State

Fairs like this are about to be held, it is certainly the further duty of all thinking persons, who have, or may have, the ability to do so, to make as large a display as possible, for the benefit of those who visit such exhibitions, as a rare event in their work-a-day lives, and have seldom or never been permitted to look upon such an accumulation of Floral riches as Milwaukee might have shown, but did not show, on this particular occasion.

"And, yet, there were a few noted examples of public spirit, and individual taste and liberality, seen in our department; and these, too, in a good part by citizens of Milwaukee. And, even one truly creditable individual collection will do much towards redeeming the general barrenness, or bad taste of an entire exhibition. The fifty-five varieties of healthy 'GREEN-HOUSE PLANTS' shown by Mr. Messinger, is one example of what Milwaukee can do—and one worthy of Milwaukee.

"There was a little 'Basket Boquet with handle,' arranged by Miss E. Ogden, of Milwaukee, a perfect gem in its way, and the happiest illustration of good taste in the arrangement of flowers that your Committee remember ever having seen in the broad North-west.

"The display of DAHLIAS, PANSIES, &c., belonging to Mr. B. P. Cahoon, of Kenosha, would have done no discredit to a great Floral exhibition in any of the older States of the Union, if not of all Europe.

"A collection of VERBENAS, much damaged by carriage, shown by F. K. Phœnix, of Delavan, must have been choice and beautiful when freshly gathered. It is, however, almost impossible to preserve delicate cut flowers, that have to be transported a long distance by land carriage, and especially over ordinary carriage roads; hence, again, the necessity of a spirited competition among the florists in the immediate vicinity of Horticultural Exhibitions.

"There were several Flower Baskets, Vases, Floral Designs, &c., (quite praise-worthy, as first efforts, and as showing a desire to perform a duty) but we are sorry to say, not one of them sufficiently superior to be entitled to particular notice, or according to the rules, are they thought worthy of the Society's premium. Indeed, we fear, that in three or four instances, where we have made an award, the premium has been given to comparative, rather than positive excellence. The great fault with nearly all the floral designs, and vases of flowers, was the common one of crowding too many specimens together. Beauty and grace being sacrificed to show and profusion, and the simplicity of nature entirely lost in mistaken attempts at gaudy art. In designing, true art copies nature, and nature looks to the blending of colors, and an arrangement of foliage that is always pleasing; and any great departure therefrom, in the artist, is always shocking to true taste.

"We advise exhibitors to take a leaf from the ever-open, and easily read Book of nature, and artistically weave in more leaves of plants, and trees, among the showy flowers, which are the gems of their designs. All jewels require an appropriate 'setting;' and the only setting of flowers, in a simple boquet, vase, basket or design, is green foliage of the same plants or others, that do little violence to nature.

"How many, who visited the beautiful show grounds at Milwaukee, thought of the availability of the gloriously tinted 'autumn leaves,' that made the noble remnant of natural forest the most exquisite treat of all to the patriotic lover of the beautiful in nature? Had a few of the ladies of Milwaukee prevailed on husbands, sons, or lovers, to gather a store of these gorgeous ornaments, and then wreathed them, in tasteful, natural arabesque, around the show tables and the tent ceiling, an effect would have been produced, as gratifying as it would have been creditable and full of the beauty of novelty, congruity, taste and harmony.

"Had this been done, (and if it had been suggested, it would, doubtless have been executed,) your Committee, who have been compelled to judge more as critics, than as satisfied admirers of your Floral Department, might have had an excuse for throwing more of the praise growing out of enthusiasm, into this their hasty and unstudied report. But to the ladies of the Wisconsin city or village, near which the next State Fair may be held, we confidently commend the arrangement and display of another year, in this, which should ever be made the most brilliant and tasteful part of these great State Exhibitions."

PAINTINGS.—No. of Entries, 55.

Judges.—William L. Utley, Racine; Benjamin F. Hopkins, Madison; Alfred L. Castleman, M. D., Delafield.

Best specimen of painting in oils; Alfred Payne, Racine. Diploma.

Second best specimen of painting in oils; Miss Mary Francis Smith, Milwaukee. Diploma.

Best specimen of painting in water colors; Mrs. David Johnstone, Milwaukee. Bronze medal.

Best specimen of card printing; Henry Arthur Starr, Milwaukee. Bronze medal.

Best specimen of book printing; Rufus King & Co., Milwaukee. Bronze medal.

The Committee in their report say "the collection of paintings and drawings submitted to our inspection, composed a highly ornamental portion of our Fair, and one creditable alike to our artists and to the State.

"The collection was one varied and extensive, embracing portraits, landscapes and fruit pieces in oil, miniatures on ivory, fruit and flower pieces in water colors, colored crayon drawings, a variety of chalk and pencil drawings, and excellent specimens of daguerreotypes.

"Where there was so much merit, and in a department where a correct estimate requires a cultivated taste, there would naturally be a diversity of opinion. Yet in the collection were many productions, whose merits were generally acknowledged. In regard to the award of the first premium, there was but one opinion entertained alike by the Committee and by the artists present. As to the award of the second premium, there was more difference of estimation. Taking into consideration excellence of drawing, merit of design, simplicity and harmony of color, with facility of execution, the Committee are satisfied that they have not greatly erred.

"Of those artists, who, though they were awarded no premium, presented works which elicited the commendation of all, proper mention must be made in this report.

"In the first place, we would notice a small portrait in oil, by Hendrick Vianden, of Milwaukee, which was indeed a choice specimen, admirably drawn, and deeply and harmoniously colored, while the arrangement of light and shadow was both simple and effective. The same artist had other paintings exhibited, all showing his ability, but none equal, we think, as a real work of art, to the little picture we have mentioned.

"Next in order, we must notice a portrait in oil, by Isaac Dorward, of Milwaukee, excellent alike in drawing, in proportionate development of the various parts of the head, and as a work of art generally. A fine portrait indeed, though, we think, rather too luridly colored, and rather too highly worked in the details. We care not for the manner of the execution, if we have but the effect; and it is a fact, that it is almost, if not quite impossible to produce the softness of flesh, where the surface of the picture is finished to nearly a polished smoothness.

"The same artist also exhibited several colored crayon drawings, drawn with great freedom and accuracy. These received and deserved particular attention.

"R. A. Clifford, of Milwaukee, exhibited several landscapes. These were productions of a young artist, and they show good capacity, and are creditable to him; but we would kindly advise him to copy nature in her simpler efforts, rather than to trust to his memory or fancy, in coloring copies from engravings.

"Several landscapes exhibited were the work of Mrs. Kirby, of Milwaukee, and her we advise also to go directly to nature in her studies. The pictures certainly show ability, and we are glad to be able to speak to her a word of encouragement.

"We are pleased also to notice some fine pencil drawings, much admired by the Committee and others, executed by Miss Aurora Elliott, a young lady of Watertown, in this State. An original pencil drawing of flowers by a lady, Mrs. E. S. Turner, of Grafton, was tastefully executed and greatly admired.

"Among the many works of merit, we must not omit referring to a portrait drawing of the life-size in black crayon, by a lady of Milwaukee, Mrs. S. M. Booth. This picture was noticable for the vigor and accuracy of its execution.

"We will lastly speak of the miniatures on ivory; they were well drawn, well colored, and otherwise deserving of much credit.

"We are far from thinking that we have noticed all those works whose merits deserved mention, among the great variety presented, yet, perhaps, we have been lengthy enough for a report of this kind. We repeat, that the display reflected great credit upon both the artists, and upon our State, and we are happy to see prominence given to works of taste in an agricultural exhibition. Let the arts go hand in hand with all science, and especially with agricultural science in its advancement, and let them exercise their ennobling influence in developing the power of appreciation of beauty, in refining the taste and in cultivating the hearts of the great mass of our countrymen.

STOVES, CUTLERY AND SILVER WARE—No. of Entries, 26.

Judges.—A. F. Cady, Watertown; Daniel Wells, Jr., Milwaukee; Joseph Cary, Milwaukee.

Best cooking stove; C. Shepard, Milwaukee. Bronze medal.

Second best cooking stove; Decker & Saville, Milwaukee. Transactions.

Best ornamental parlor stove; Decker & Saville, Milwaukee. Bronze medal.

Best sample of hollow ware; Decker & Saville, Milwaukee. Fessenden's Complete Farmer and Gardener.

Best exhibition of table cutlery; Henry J. Nazro & Co., Milwaukee. Fessenden.

Best exhibition of pocket cutlery; Henry J. Nazro & Co., Milwaukee. Transactions.

Best exhibition of silver ware; A. B. Van Cott, Milwaukee. Transactions.

Parlor cook stove; Lansing Bonnell, Milwaukee. Transactions.

Coal grate; C. Shepard, Milwaukee. Transactions.

MISCELLANEOUS AND DISCRETIONARY.—No. of Entries, 170.

Judges—I. A. Lapham, Milwaukee, Chairman.

The Committee in their report, speak of the very great number of articles presented for their consideration, and especially their varied character, and regret that the time was necessarily so limited which was alloted for their examination.

"Many of the articles exhibited were without competition, inasmuch as they were *sui generis*. The Committee, however, endeavored to notice all articles that seemed worthy, and with as much impartiality as possible, In the great multiplicity of important inventions exhibited, they remark that it would not be strange, if, in some cases, they had failed to appreciate them properly.

"B. A. Jenkins, of Genesee, exhibited a casting for a wind-mill and pump, of very simple construction. And J. W. Osborn, of Albany, N. Y., had in operation the model of a wind-mill, so arranged that the draft of wind could be regulated. These ancient contrivances have their uses, and especially in some portions of our State, where it is necessary to raise water from considerable depths.

"A domestic invalid chair, contrived by Dr. Asa Blood and exhibited by D. S. Cady, of Milwaukee, is not only a convenient and ornamental piece of furniture, but by various contrivances may be adapted to the purposes, and to the different attitudes of invalids. For obstetrical practice it is said to be very valuable.

"Henry Neidecken, of Milwaukee, exhibited some very handsomely bound ledgers and other blank books, the ruling and faint lining of which were particularly worthy of note; it being even and uniform, and each page being ornamented by a ruled border. The workmanship was in every way neatly and handsomely done. Diploma.

"Weed & Eberhard, of Madison, also exhibited some binding which was characterized by excellent workmanship and superior material. Diploma.

"The exhibition of Gentlemen's Gossamer Ventilating Wigs, Ladies' Wigs and Ventilated Bands, Ornamental Hair Work, Bracelets and Perfumery, by Jared Gray, of Milwaukee, so far as the Committee could judge from an examination through the glass cases, appeared to be very creditable to the manufacturer,

"The case of prepared specimens of Birds, exhibited by Samuel Sercomb, of Madison, made a very beautiful show. The neatness of the work, and the life-like attitudes of the birds, evinces much taste and skill in Mr. Sercomb as a taxidermist. His museum in Madison, contains many valuable illustrations of the Natural History of the State. Diploma.

"Herring's Salamander Safe with his Powder Proof Lock, was exhibited by Lansing Bonnell, of Milwaukee; and, as far as could be ascertained by the Committee, was deemed to be as represented, a fire-proof, as well as rogue-proof article.

"Four doors of good workmanship, were exhibited by Smith & McVickar, of Milwaukee. The joints were tight, smooth and strong, as all doors should be. The same may be said of the window blinds and the window sash exhibited by them. The same manufacturers also exhibited a quantity of flooring and planed pickets, which was very neatly dressed by their planing machine. This work was much smoother, and there were less marks of the plane upon it than is usually seen in lumber dressed by machinery. Transactions.

"Messrs. Power & Schley, of Milwaukee, exhibited two maps; one of this State, executed on a scale of three-fourths of an inch to the mile; the other, of Milwaukee county, executed on a scale of two inches to the mile. These were very creditable evidences of their taste, skill and industry. In representing to new comers the relative advantages of the different sections of Wisconsin, they will undoubtedly prove valuable.

"C. L. Herring, of Milwaukee, exhibited a lightning rod and points, which were well constructed and well insulated. So far as could be ascertained by your Committee, these rods are as complete and reliable as any offered to the public.

"Erastus Fairbanks & Co., of St. Johnsbury, Vt., exhibited platform and grocer's scales of different form and finish. There were several competitors in this department, but the Committee deemed those exhibited by Messrs. Fairbanks the most perfect and best finished. Diploma.

"Henry Middleton, of Milwaukee, exhibited several satin parasols, and silk and gingham umbrellas, which were manufactured by him, and were very creditable specimens of his workmanship. Transactions.

"The feather muff exhibited by Mrs. Betsy M. Sears, of Rome; a sett of regalia by A. B. Van Cott, of Milwaukee; a squirrel skin tippet by J. W. Spencer, of Watertown; the fur mitts and gloves, the fur cuffs and victorines, the fur and silk hats, and the cloth and silk plush caps, by Throop & Bailey, of Milwaukee; the shoes, four cases of which were exhibited, the ladies' rubber boots, and the gentlemens' calf boots, by A. Dunnels & Co., of Milwaukee; and the cork-soled boots, by John Grotsch, of Racine, all were commendable evidences of skill and taste.

"The full dress suit, and other articles of clothing, exhibited by J. A. Swaim, of Milwaukee, were fine evidences of the skill and perfection to which this department of the fine arts has been brought. Diploma.

"The specimens of saddlery and trunk making, exhibited by J. B. Decker, of Milwaukee, were very creditable and excellent articles. Transactions.

"The white kaolin soap, exhibited by Ezra Birchard, of Racine, may possess advantages over common soap; but of this the Committee were not informed practically, not being able to test the same.

"There were numerous articles of hardware, exhibited by H. J. Nazro & Co., all of which appeared to be of excellent quality.

"D. A. Putney, of Brookfield, exhibited a drilling machine, which was very ingeniously constructed, but so far as the Committee can learn, has no new principle or improvement. It may be adjusted for either wood or iron.

"The beading machine, exhibited by C. Shepard, of Milwaukee; the Buck-eye clothes-washer, by John Laycock, of Gratiot, Ohio; the patent mill-stone picker, by N. Taylor, of New Hampshire; and Flint's patent lever self-calculating scale, exhibited by William Sawyer, of Milwaukee; all seemed to be good and useful machines, and well adapted to accomplishing their respective ends.

"The sewing machine, exhibited by I. P. Rogers, of Milwaukee, is an invention admirably calculated to aid in the great business of saving human labor. Diploma.

"The double-valve steam engine, exhibited by Turton & Sercomb, of Milwaukee, was of beautiful construction and high finish—in its working it excels; and being manufactured in Wisconsin, it affords gratifying evidence of the perfection to which our mechanical interests have been carried.

"Specimens of India rubber goods were exhibited by William Brown, jr., and H. J. Nazro & Co., all of Milwaukee. These articles are highly useful in their way—no difference could be detected in their relative value.

"The samples of dressed flax, exhibited by John Galbraith, of Mukwonego, are worthy of special commendation.

[The Executive Committee have taken suitable action upon this article.—A. C. I.]

"The bunches of shingles, exhibited by Nelson Ludington, of Milwaukee; the barrel of pearlash, by J. D. Wheelock, of Mayville; the boxes of soda and small crackers, by Thomas Orchard, of Milwaukee; the case of tobacco and cigars, by H. A. Gaston, of Beloit; the fine cut tobacco, by C. Athearn & Co., of Milwaukee; the horse shoes and nails, by E. Thayer, of East Troy; the brooms, by Chapman & Crafts, of Troy; the boxes of soap, by H. S. Burton & Co., of Milwaukee; six milk pans by Wm. Le Fevre, of Milwaukee; bread toasters, egg beaters, and especially the *cork puller* (an article of practical utility in a new country,) by C. A. Buttles, of Milwaukee; and the stencil plates, by John A. Welch, of Winnebago; were all good samples of the mechanism of our

State, and will compare favorably with any similar articles made in the world.

"The model of a machine for cutting and jointing staves, exhibited by C. G. Sheffield, of Urbana, Ohio, is worthy of special mention. It is simple in its construction, and in the opinion of the Committee, admirably designed to accomplish the work for which it was intended. Samples of the work were exhibited with it, which were as perfect as could be desired.

"Russel's chimney-top ventilator, exhibited by Thomas Vaux, of Milwaukee, is doubtless a good article of its kind, but this Committee are of the opinion that all chimneys should be so constructed as to render any such unsightly appendage at the top wholly unnecessary.

"The hot air registers and coal grates, exhibited by C. Shepard, of Milwaukee, are very useful articles, and should be introduced into all new buildings, as perhaps the only means of keeping the rooms properly supplied with good, wholesome, fresh air. It is generally admitted, that the neglect of proper ventilation in our houses, is the cause of much of the sickness with which we are now afflicted. Every school house especially, should be provided with these useful articles. Diploma.

"The apparatus and fixtures for gas lights, exhibited by John Lockwood, of Milwaukee, were very beautiful specimens of this kind of workmanship; and the dial-metre was a very ingenious self-register of the flow of gas. It is with much pleasure that this Committee note the fact, of the speedy approach of the introduction of gas light into this city—making light its dark places, and furnishing additional means of comfort and safety to its citizens. Diploma.

"The musical clock exhibited by A. B. Van Cott, of Milwaukee, while it attracted much attention, was an article of more show than usefulness. The gold watches, jewelry, silver and silver-plated ware, exhibited by Mr. Van Cott, were well worthy of notice.

"The saddle buckskins, and buckskins for gloves, exhibited by Christophe Doerfloer, of Milwaukee, were very fine and beautiful samples of the art of preparing and rendering useful as well as ornamental, the skin of the deer.

"The fancy wardrobe, exhibited by Auguste Flertzherm, of Milwaukee, and the stands and ladies' work table, by the same, were very elegant specimens of cabinet work, and do credit to any workman. The flowers and butterflies with which the surface of the work table was inlaid, attracted particular attention. And they lose none of their interest from the fact that the woods employed (*Euonymus Atropurpureus, vulg Wauhoo*) grow wild in the vicinity of Milwaukee. Diploma.

"The new friction matches, exhibited by David Burr, of Milwaukee which do not, when lighted, emit nauseous and poisonous fumes, will doubtless soon supercede the common article.

"The China, Brittania ware, plated ware, glass lamps, and especially the American cutlery exhibited by F. J. Blair, of Milwaukee, were well worthy of favorable attention, having been selected with taste, and due regard for durability and service.

"The two-horse carriage, exhibited by Mr. Gray, of Raymond, and the child's carriage, by Cyrus Child, of Milwaukee, were good and useful articles, and show that Wisconsin is gradually becoming a manufacturing State, and assuming an independent position among the States and communities into which the world is divided.

"Card's self-sustaining farm fence, exhibited by S. P. Wadsworth, of Wyoming county, N. Y., is, in the opinion of the Committee, a good improvement. Having no connection with the ground (except to rest upon it) this fence is susceptible of easy removal, and not liable to fall by the decay of posts at the surface.

"Sidney L. Rood, of Milwaukee, exhibited a very fine show of books which added much to the attraction of the Exhibition.

"The mirror mantle and trimmings, exhibited by George W. Mygatt, of Milwaukee, were elegant in appearance and chaste in design Diploma.

"In the department of agricultural products that fell under the notice of this Committee, was a bunch of teazle, raised in Milwaukee by Frederick W. Schoelner, showing that our soil and climate are adapted to the culture of this crop, so useful in the manufacture of woolen cloths. Norton's Elements of Scientific Agriculture.

"John T. Perkins, of Milwaukee, exhibited two bottles of currant wine, of the vintage of 1850, and also two bottles of the vintage of 1851. E. W. Edgerton also exhibited samples of the same wine, of the vintage of 1849, also of the vintage of 1850. These samples compare ery favorably with the wine of the grape, and the Committee recommend that suitable testimonials be awarded. Bronze Medals.

"The cast iron Corinthian column, exhibited by Turton & Sercomb, f Milwaukee, is worthy of the attention of the Executive Committee.

"The groupe of deer, and bust of Rev. Bishop Henni, exhibited by S. I. Brooks, of Milwaukee, are excellent specimens of his skill.

"In the department of the fine arts, the Committee notice with pleasre the specimens of designing, exhibited by Albert C. Ingham, the oresponding Secretary of this Society, being the diploma and medals f the Society, and they recommend that a diploma and a silver and ronze medal each, be awarded to him ; not only for these designs, but acknowledgment of his active and efficient efforts to promote the ause of agricultural improvement in Wisconsin. Diploma, Silver medal, ronze medal.

"The volume of Transactions of this Society for 1851, printed and khibited by Beriah Brown, of Madison, is a very good exhibition of hat can be done in Wisconsin, in this department, and should be suitaly acknowledged by the Executive Committee. Silver medal.

ESSAYS.

Report of the Committee.

"The Committee, to whom the Essays presented for the premiums of the ociety were submitted, have examined them with an anxious desire to nd some, at least, among them which would well justify the Committee awarding to the author, the premium offered by the Society. They egret, however, to say that they have failed in this object. Neither of e Essays presented are, in their opinion, such as would do credit either the author or to the Society. They, therefore, recommend that the ssays be returned to those presenting them.

"The Committee might here close their report, but they cannot forbear rging upon the Agriculturists of the State, greater readiness in laying efore their co-laborers, the results of their experience. The climate d soils of Wisconsin have marked peculiarities which distinguish them om those of the older States. Experience and experiment, therefore, re necessary to develope, to their full extent, her agricultural resources. he results of these, if spread before the public, would, in a few years, diffuse a knowledge of the proper modes of cultivation of all crops adapted to our soil and climate, and thus could not fail greatly to benefi the cause of agriculture. To accomplish this, the Essays need not be long. The great object should be to express, with sufficient detail, in- deed, but without unnecessary prolixity, facts, such as the time of sow- ing, the quantity and kind of seed, &c., with the exact results of experi ments. The community want facts, not theories; of the latter, there is already a redundancy; of the former, there can never be too much.

E. V. WHITON,
F. RANDALL, *Committee.*
T. T. WHITTLESEY,

ANNUAL MEETING, JANUARY 19, 1853.

The Second Annual Meeting of the Wisconsin State Agricultura Society was held at the State Agricultural rooms, in the Capitol, at Madi son, on the third Wednesday of January, A. D. 1853, being the 19t day thereof, and the day fixed by the Constitution of the Society fo holding the same.

At three o'clock, P. M., the Hon. Henry M. Billings, President, too the Chair, and called the Society to order.

Mr. Ingham, the Corresponding Secretary, presented and read the r port of the Executive Committee of the Society, which, on motion (A. P. Dickey, Esq., of Racine, was accepted and adopted as the repo of the Society, to be transmitted to His Excellency, the Governor the State, as required by law.*

Hon. Simeon Mills, the Treasurer, presented the report of the receipt expenditures and financial condition of the Society, which was read b the Secretary, showing the total receipts of the Society for the year, be $2,748 45, and the total expenditures for the same time, to l $2,714 68, with a balance in the Treasury, of $33 77, as follows:

* See p. 11.

TREASURER'S REPORT.

To the Wisconsin State Agricultural Society:

The undersigned Treasurer respectfully reports:

That there has been received into the treasury of the Wisconsin State Agricultural Society for the year ending December 31st, 1852, the following sums of money, to wit:

From State Treasurer	$500 00
" Albert C. Ingham, Esq., Secretary	1,023 50
" Miscellaneous Sources	1,139 50
" Balance in Treasury, December 31st, 1851 . .	85 45
Total	$2,748 45
There has been paid out to defray the necessary expenses of the Society, and in payment of premiums for the year 1852, the sum of	$2,714 68
Balance in Treasury . . .	$33 77
There is Silver Plate on hand, valued at	50 00
Total	$83 77

Vouchers for each and every item of disbursements made on account of the Society for the year 1852, are herewith presented for the examination of the Society, or of such Committee as the Society may see fit to appoint.

All of which is respectfully submitted,

SIMEON MILLS,
Treasurer State Agr. Society.

Col. BILLINGS, Chairman of the Auditing Committee, presented the Report of that Committee, which was read by the Secretary as follows:

REPORT OF THE AUDITING COMMITTEE.

We, the undersigned President and Secretary and *ex officio* Auditing Committee of the Wisconsin State Agricultural Society, do hereby certify that we have carefully examined the books, papers, and vouchers, of the Treasurer of the Society, and find the same to be in all respects correct, and the balance in the treasury for the year ending December 31st, 1852, to be correctly stated at $33 77 in money, and silver plate for medals valued at $50.

The receipts of the Society for the year have been from the following sources:

From Life Members	$70 00
From Annual Members	821 00
From State of Wisconsin	500 00
From Miscellaneous Sources	1,272 00
Balance in Treasury December 31st, 1851	85 45
	$2,748 45

The Expenditures have been as follows:

For Premiums	$876 04	
" Expenses of the Fair	549 40	
" Postage and Express	81 14	
" Salaries	800 00	
" Printing and Advertising	221 99	
" Miscellaneous Expenses	186 11	
		$2,714 68
Balance in Treasury, December 31st, 1852		$33 77

HENRY M. BILLINGS, *President.*
ALBERT C. INGHAM, *Corresp. Secretary.*

MADISON, January 19th, 1853.

A. F. PRATT, Esq., of Waukesha, moved that the Reports of the Treasurer and Auditing Committee be referred to a Committee of three, which was agreed to.

And the President appointed as such Committee, Hon. JOSIAH F. WILLARD, of Janesville; Hon. JOHN B. SMITH, of Milwaukee; and Hon. N. M. DONALDSON, of Fond du Lac.

The Society then adjourned until 6 o'clock, P. M.

SIX O'CLOCK, P. M.

The Society was called to order, the President being in the Chair.

Hon. JOSIAH F. WILLARD, Chairman of the Committee, to whom was referred the reports of the Treasurer and Auditing Committee, presented the following Report, which was read by the Secretary:

"*To the Wisconsin State Agricultural Society.*

"The Committee appointed by the State Agricultural Society to examine the books of the Secretary, and the books and report of the Treasurer of the Society, have had the same under consideration, and beg leave to report:

"That they find the receipts and expenditures, as stated in the Report, correct. They find that the books of the Society are kept on correct principles, and in a neat and business-like manner, and they find nothing but what shows that the receipts and expenditures are stated correctly. The Secretary has afforded your Committee every possible facility in producing vouchers and making explanations to facilitate them in their investigations.

"Some of the Expenditures at Milwaukee, during the Annual Fair, held in the month of October last, your Committee look upon as not warranted, or calculated to promote the interests of the Society, however your Committee feel it due to the Secretary to state, that this was owing to circumstances beyond his control—the particulars being for expenditures at the United States Hotel, and for what is called refreshments at the President's tent on the Fair grounds.

"Your Committee would further say, that with these exceptions, they are satisfied that the financial affairs of the Society have been conducted with fidelity.

JOSIAH F. WILLARD,
JOHN B. SMITH,
N. M. DONALDSON,
Committee.

MADISON, Jan. 19, 1853.

Which said Report was adopted.

A. F. PRATT, Esq., of Waukesha, moved that a Committee of five be appointed to select, and recommend the names of persons suitable to fill the various offices of the Society; which was agreed to.

And the President appointed as such Committee, Messrs. A. F. PRATT, of Waukesha; MASON C. DARLING, of Fond du Lac; HORACE A. TENNEY, of Madison; JOSIAH F. WILLARD, of Janesville; and HIRAM BARBER, of Juneau.

The said Committee, having retired for consultation, after some time returned, and reported the names of the following gentlemen as suitable persons to fill the various offices of the Society:

President.—Elisha W. Edgerton, of Summit, Waukesha county.

Vice-Presidents.—Bertine Pinkney, of Rosendale, Fond du Lac county; Nathaniel B. Clapp, of Kenosha, Kenosha county; Charles Dunn, of Belmont, La Fayette county.*

Recording Secretary.—Albert C. Ingham, of Madison, Dane county.

Corresponding Secretary.—Albert C. Ingham, of Madison, Dane county.

Treasurer.—Simeon Mills, of Madison, Dane county.

Additional Members of the Executive Committee.—Hiram Barber, of Juneau, Dodge connty; Henry M. Billings, of Highland, Iowa County; Z. P. Burdick, of Janesville, Rock county; † Martin Field, Mukwonego, Waukesha county; S. S. Daggett, of Milwaukee, Milwaukee county.

Which Report was, on motion, accepted.

Hon. Warren Chase, of Fond du Lac, moved that the Report be adopted, which was agreed to, and the officers declared duly elected.

The Society then adjourned.

HENRY M. BILLINGS,
President.

Albert C. Ingham,
Secretary.

* Judge Dunn subsequently tendered his resignation of the Office of Vice-President of the Society, which was accepted by the Executive Committee, and Hon. Jeremiah E. Dodge, of Potosi, was chosen to fill the vacancy.

† Z. P. Burdick, Esq., having resigned the office of an Additional Member of the Executive Committee of the Society, Mark Miller, Esq. of Janesville, was chosen to fill the vacancy.

CORRESPONDENCE.

COUNTY AGRICULTURAL SOCIETIES.

COLUMBIA.

OTSEGO, December 6, 1852.

DEAR SIR:—The first Annual Fair and Cattle Show of the Columbia County Agricultural Society, was held in the village of Wyocena, in November last; but this being our first attempt, it was, as was to be expected, somewhat meagre; however, as a starting point and a beginning, it was one of which we may justly feel proud. Like our parent, the State Society, we commenced without funds or patronage. Our birth was lowly and humble; our future—who shall say?

At the session of the Board of Supervisors in November, 1851, a few of our practical farmers, while chatting sociably on this topic, proposed having a primary meeting, for the purpose of getting an expression of public sentiment. It was done. A proposition to organize a County Society was received with favor. Committees were appointed to draft a Constitution and By-laws, and to nominate officers. An adjournment then took place, and on re-assembling, a Constitution was agreed upon, officers appointed, and an address delivered by Hon. Joseph Kerr, of Randolph, and under such auspices, we came into existence; the vital spark was infused into our materiality, and now it needs but little to fan it to the vigor of manhood.

The notice of our Fair had been issued only a few days prior to the time of holding it, consequently the attendance was thin, and yet large enough to show that, with proper organization and a due share of exertion on the part of each member and officer, Columbia will yet take a proud position among her sister counties in this State, in the cause of agriculture. To obtain that point, but one course is necessary. The Society has now taken root; let it extend its branches into each township, school district, and road district; let its members, and all friends of agricultural knowledge, take an interest in its welfare, and it must succeed.

The officers elected for the ensuing year, are as follows:—President, Joseph Kerr, Randolph; Vice-Presidents, Daniel S. Bushnell, Wyocena, and George M. Bartholomew, Lodi; Secretary, Henry Converse, Wyocena; Treasurer, Frederick C. Curtis, Lowville; Executive Committee, R. C. Rockwood, Wyocena; J. Q. Adams, Fall River; John Converse, East Randolph; Jesse Van Ness, West Point; Henry Merrill, Portage City.

I remain, dear Sir, truly yours,

JOHN A. BYRNE,

Sec. Columbia Co. Agr. Society.

To Albert C. Ingham, Esq.,

Sec. of the Wis. State Agr. Society.

DANE.

Pheasant Branch, November 13, 1852.

Dear Sir—The Dane County Agricultural Society was organized in 1851, by the adoption of a Constitution and By-Laws, and the election of officers. The first Annual Fair was holden at Madison, in September last. It numbers now one hundred and twenty members. The receipts of the Society have been $120 00, and its expenditures for premiums and expenses $105 25. An Address was made to the members of the Society by its late President; and its first Exhibition was altogether creditable to the Society. The Exhibition of sheep was small; of cattle and horses, good. The first Exhibition of the Society has demonstrated that Dane county possess the means of constituting a large and respectable Society, and one of great utility to the county; and that an Agricultural Society is a public institution, and ought to be sustained as such in view of its benefits to the Agricultural interests of the county.

The officers elect for the coming year, are as follows:—President, William H. Fox; Vice-Presidents, Reuben Winston, W. M. Colliday, Adin Burdick, Walter Waddle, Wm. Douglas, Philo Dunning; Treasurer, Jehu H. Lewis; Secretary, Robert L. Ream; Standing Committee on Premiums, Simeon Mills, William H. Clark, Abel Dunning.

I am, very respectfully yours,

THOMAS T. WHITTLESEY,

President.

To Albert C. Ingham, Esq.

Sec. of the Wis. State Agr. Society.

ADDRESS BY HON. THOMAS T. WHITTLESEY,

PRESIDENT OF THE SOCIETY.

Members of the Dane Agricultural Society:

It gives me great pleasure to meet with you on this occasion, and with all who have come up to witness this, our first exhibition. Your presence is an attestation of the lively interest you feel in our success. If viewed merely as a social gathering, it is beneficial; as a meeting of farmers, collected for agricultural improvement, we can discern therein the germ of extensive good. The display of agricultural products and mechanical skill here to-day, reflects great credit on the Society, yet in its infancy, and gives strong promise of what it will do in future years. The generous co-operation so liberally extended, cannot fail to encourage and stimulate us to increased exertion.

Agricultural Societies are essential to our progress in the right cultivation of the soil. They lead to the dissemination of knowledge, to the concentration of effort, the support of agricultural papers; and they create a lively interest in the cause in which we have embarked. They are formed in all agricultural States, and agricultural exhibitions are becoming more and more popular, fast growing into favor as points of great attraction, enlisting the chivalry, the genius and fashion of society, and unlike the tournaments of feudal times, improve as well as delight the beholder. Agricultural exhibitions must be the farmer's great festival; once a year he must come up with his wife and children, to this feast of fat things. This is the time and place for children to acquire agricultural tastes. They will insensibly imbibe an interest for an occupation which, at least, once a year, seems to be in such general estimation. The same law governs in this as in all other pursuits,—the heart must be in the cause. A pursuit which does not draw out, and engage the noblest qualities of the man, ought to be abandoned, a pursuit on which the energies of a judicious mind have been expended, and which does not then remunerate the operator, ought to be abandoned. There is no apology for a farmer who spends his strength for that which is not bread. It is the object of Agricultural Societies to give a proper direction to agricultural pursuits, to improve our knowledge in making good crops, good orchards, and to lay the foundation of successful farming, and thereby of peaceful and quiet homes. The farmer must not work for pay alone, but like the volunteer soldier who strikes for liberty, he strives for the attainment of a nobler object; like the enthusiastic Alexander, he must conquer for the love of it. The cultivator of the soil must have a farmer's education, a farmer's taste, a farmer's dress. The soil, like a fierce animal, seems to be more kind and pliable, when handled by one who understands its nature; encourage then, Agricultural Societies, as you value your own interest.

Notwithstanding some discouragements under which we have all labored, we ought to be grateful for the many advantages we enjoy. In comparison with the older States, our struggles have not been arduous or severe; we have entered into a land of promise, without fighting our way through hostile States, into a land of the purest fountains and most abundant food. We live in an age when genius and science have worked out wonderful results, in an age of unsurpassed discoveries, and we have now the full benefit of those results and of those discoveries, and are now springing into the full maturity of life, while other States have had to pass the infant's progress, a state of weakness and imbecility. We have not been obliged to go armed to the church or to the field of labor. All is peace and tranquility, we have a healthy climate, and a soil of easy culture, we have access to a great variety of the most improved agricultural implements. We have more within our reach, to gratify taste and luxury than we ought to buy. What State within twenty years of its first settlement, has emerged with less labor and less violence, to as high a state of refinement?

Situated, as we are, in one of the best agricultural counties in the State, containing lands well adapted for tillage, for orchards and for stock raising; when the railroad penetrates our borders, and gives us, at all times, access to the Atlantic Seaboard, what more can the farmer ask or need, but well directed industry, to crown his efforts?

Distinguished men in all ages have belonged to our fraternity. It is the oldest society on record. The ruling passion of the immortal Washington was for farming, and no vocation has been so honored by the good and the great as that of the agriculturist. Shepherds and husbandmen have been the chosen recipients of those divine messages which have brought peace to man. It is an employment congenial to our nature, and it exerts upon it a great moral influence. No farmer can go into his field without observing a heavenly power aiding his own. The man who cannot harmonize with nature's laws, whose perversity runs counter to her great commands, must give up farming, and he generally does. As agriculture is the great source of national wealth, it is the great prop of society. Our lands are divided into moderately sized freeholds, none sufficient to make their possessors over opulent; this division of property, and the nature of it, is a great safeguard to society, and a preventive to sudden and violent political convulsions—it is the great conservative shield for general protection. A republic of farmers cannot be overturned. The genuine farmer is always frank and courteous—his heart is full of benevolence. The genial breezes which breathe the fragrance of heaven upon his fields, and wave the golden ears of bending grain, inspire the best feeling of which our nature is susceptible. By a high command, we take from the great lap of nature, what has been for our use so plenteously poured into it. Earth is our mother, and we feel at home on her bosom; our vocation is an honored one—a high one—a religious one.

It must and will take its ancient position in advance of all others which have since sprung up from the vices and follies of mankind—it will be partially obscured so long as the chief good of human life is placed in the accumulation of wealth. When this Pagan error is eradicated, and this vile scramble for dollars is broken down by your Agricultural Societies, the golden age may then return, and as a preparatory step to this glorious epoch, and in order to equalize the exchanges between your own produce and foreign goods, you must from this time begin to sell dear and buy cheap. Control your own market—let your produce supply your wants—contract the fewest possible debts, and these by no means in advance of your produce. Book debts are ruinous to farmers. This in all cases may not be practicable, but aim to make it so; be not obliged to sell if you can possibly avoid it, but remember that History records no great achievement without great effort, great labor, great privations, and great endurance. Our profession requires a most constant and wakeful attention, and if we are true to ourselves, and work by method and knowledge, as business men do in other trades and professions, and are not able to live on a respectable equality with our fellow citizens, the social system must be revolutionized and remodeled—a screw is out somewhere. We either pay exorbitantly high, and sell egregiously low, or we misapply our labor. It is the object of our Association to promote inquiry and remedy such defects as may be found to exist. Union is strength. We have a good soil, a healthy climate; and what prevents the farmer from attaining some degree of affluence?

This question, it is important to examine. The farmer cannot, by any process of agricultural labor, attain to excessive wealth. But if good land and a good climate will not raise an industrious farmer, with judicious systems of management, to competence and independence, a case of hopeless despondency is then presented; and desperate must be the conditions of the individuals, and of the government which derives, as in this State, nearly all its support from the landed interest. It is true, that for the last two years, great embarrasment has pervaded the farming interest; it has been felt in the non-payment of domestic and foreign debts, and then, inquiry is made abroad, why do not your farmers, when land is so cheap, make money? That a great pressure has existed for the want of money, is evident from the great demand for it, and the high interest it has borne. As wheat is our great staple, the low price of that grain, and the expense of transportation, has been assigned as the prominent cause of our depression. Counting upon our wheat crop, we bought more on credit than we could realize out of it; heavy taxes, by reason of owning more land than we could improve; paying a high interest for an extended credit; improvident expenditures, in buying everything and manufacturing nothing; too much waste land without profit, and a wasteful and injudicious management, with the successive failure of the wheat crop, have blighted the farmer's hopes, and impoverished his purse. The truth is, we have been buying experience, which, though dearly bought, will prove in the end salutary, and was in fact necessary to correct an error something like that which Dr. Franklin said was somewhere prevalent, that chickens were then flying about, already cooked and ready to be eaten! We have been too sanguine in our anticipations, beyond the limits of prudence and common sense. Good farming is the exercise of consummate skill and judgment, and is not to be trifled with by unskilful hands. How can we expect other than hard times, if we do not produce what will equal our expenses? We must either produce more and expend less, or produce an article which has value, or will sell at a remunerating price, affording a nett profit over all expenses. Hard times are simply the excess of expenses over income, and they are about the only thing of home manufacture.

It is the policy of the farmer to raise that for which there is demand. Supply and demand regulate the price. In some years there is a demand for pork, as at present—now worth seventeen dollars a barrel—then again for wheat, and again for potatoes, barley, oats and corn. Cheese always brings a good price, and cattle and wool are in good demand. Now the farmer who, when the price is up, has nothing of that article to sell, consoles himself by resolving that the next year, for instance, he will make pork—he is tired of raising wheat, and his neighbor did so well with his pork that he is for fattening hogs. The next year, pork is down and wool is up; he changes for sheep; and the next season wool goes down and wheat goes up. Now it is sometimes proper to change, but every change, in the first instance, is attended with a new outlay; cattle, hogs and sheep require each appropriate fixtures, and different management and additional experience. A farmer ought first to consult the system of agriculture to which his farm is best adapted; whether for wheat growing, stock raising, or for dairying. Having settled this question, he must prosecute it according to his means; his implements of husbandry must be right and the very best, and adapted to his work in hand. This question must be raised and settled by every farmer in his own mind: what leading product shall I cultivate, best suited to my soil? To this particular branch of industry, without neglecting others, he must give his prominent attention; he must consult agricultural papers and books, and converse with intelligent persons on that subject, collect facts and experience, as men do in the professions of law or physic, or as mechanics in their several trades. If he decides on raising wheat, he must ascertain from close and personal attention, the best time for sowing, the amount of seed per acre, and the best quality, the best mode of preparing the ground and securing the grain, and the best market to sell in—but above all, he must learn what constitutes good plowing. And so of raising horses, cattle, and sheep. The thing must be a matter of profound thought, study and observation. It cannot be left hap hazard. His efforts will then be attended with better success, and he will derive all the secret satisfaction which success inspires.

Stock, would, in a great measure, at present, supply the place of money as currency. Two-thirds of my labor this season could have been engaged for stock.

There has been a cash demand for cattle the past year. Dane county is well adapted for raising stock, and the prices have been amply remunerative. The immigration setting in, and the emigration to California has advanced the price. Cattle have been greatly sought for, and raising them has paid well. But in answer to the inquiry, why do you not raise stock? the answer is, we have no money to begin upon. But the same objection cannot be made to raising hogs. Pork now bring a high cash price. It is the lowest depth of miscalculation to sell pork in tax paying time at $2 50 per hundred, and buy in harvest at $16.

Our county is traversed every year by Illinois farmers, carrying pork to the northern market; and Milwaukee is supplied from the same quarter—when we have, or can have all the materials, as clover, peas, acorns, and corn for making good pork. Take your pork to market at the proper time, and buy your winter groceries for cash. Wool has been a cash article, and buyers have come to your doors, cash in hand, for wool. Is there any country more favorable for raising sheep? Can we not in this branch successfully compete with the East?

These are three leading products all bearing high cash prices, and foreign money is sent here to purchase them. One cause of the scarcity of money is, we have not value to exchange for money. There has been a great demand for esculent plants. There has not been a supply of onions, cabbages, beans, and potatoes, in our own market. To raise clover seed and hops would pay well.

In addition to this, we manufacture very little. This county has paid abroad an immense sum for farming implements. I do not know of a pail manufactory in the county, and many dollars have gone out for mop handles and brooms, while enough has been paid for stoves to build ten miles of rail road. Can it be wondered at, then, that we are low in funds, and yet the direct opposite of all is within our immediate grasp.

Blame not the times, blame not your country, but make your industry more productive and more profitable.

The division of mechanical labor, renders it more productive to the operator. The manufacture of a pin, employs several hands. Why is not a division of agricultural labor equally useful? The more mind and attention are bestowed on a single branch of industry, the more it is perfected. In some States are to be found entire districts devoted to separate branches of agricultural labor, denominated the dairy district, cotton, wool or grain growing district. Dane county is admirably adapted to raising stock. Its supplies of water and pasturage are abundant. The demand for cheese will well warrant an outlay of capital for its manufacture. Dane county cheese, might rival the Cheshire or Hamburgh. Eight or ten cheeses, some twenty sheep, two or three cows, and half a dozen hogs, may furnish a comfortable supply, but not a source of great revenue. Time and tools cost something, and a divided attention to many objects of industry is unprofitable. I think it must be within the experience of every farmer, that when he raises a little of everything, he suffers in his neglect of some, while he bestows unusual care upon others. This mode of farming is more laborious, because labor-saving machines cannot be afforded, nor can the same division of labor be made, by the employment of many hands, as in a larger business. To such districts purchasers would resort for the best breeds of cattle, sheep and hogs; for the best butter and cheese; and such districts would acquire a local character and a name, which would be worth something to the producers. The county is large and varied, and adapted to different pursuits; and our position is a good one for market. Flour has been boated down the Wisconsin, and sixteen hundred bushels of wheat within ten miles were recently sold at sixty cents cash for the southern market. The Galena papers advert to the growing trade on the Wisconsin, as important to their section.

The wages of labor, compared with the price of grain, are very high. The Dane farmer pays as much for labor to raise wheat at fifty cents per bushel, as the Genesee farmer at one dollar. As compared with mechanical or professional labor, they are low; about three and five to one. The farmer, as farming is conducted, can scarcely pay his hired help from the proceeds of his farm. There is no just proportion in the wages of labor. While the cost of clearing and fencing a farm, the erection of buildings, the price of plows, wagons and other implements, is more than in the vicinity of the best markets, our grain brings less; but land is cheaper. I said as farming is conducted; for it must be admitted, that there is not enough of system and economy, and too much wastefulness every way from improvident management. I will give you two examples somewhere near the exact truth.

A. and B. owned in this county, each a section of fine land, composed of wood, prairie and water, situated not far from each other, and equal in respect to market. A. had capital; B. very little. A large and about equal proportion of each farm was fenced, and under the plow. The farm worked with capital has been sold for debt. The other is out of debt, furnished sixteen hundred bushels of wheat for market, cut fifty tons of timothy hay, and enabled the owner to invest two thousand dollars in the Milwaukee and Mississippi railroad. Now these different results followed from the widely different management. The proprietor out of debt was temperate, was never in a lawsuit, and never courted office; he held the plow or drove, and used a species of plaster which enabled him to stick to his business.

To illustrate the same idea in regard to orchards, I will read an extract from a writer in the Albany Cultivator, showing what effect different treatment produced on trees:

"We have often urged," he says, "the importance of clean and mellow culivation for young trees, to promote growth; and for older ones to furnish fruit of fine quality. Young trees in grass ground, from necessity should be widely spaded; but even this treatment is quite imperfect, and becomes nearly useless as they advance in size, and throw out roots far beyond the reach of any ordinary spaded circle. We have just measured a few trees differently treated in this particular. Small peach trees set out six years ago, and kept cultivated broad cast most of the time, have trunks a foot in circumference, two or three feet from the surface. Those in similar soil, but kept spaded in five feet circles, in grass, are only eight inches in circumference, although ten years old."

It is a prevalent idea that a farmer can do nothing without capital. My observation is, that men without capital in the commencement, have possessed themselves of what has been brought in by others. The man who takes money out of a farm, is a better farmer than he who puts it in. B. showed his wisdom by investing in the railroad, for without a railroad to Madison, farms in the interior are comparatively worthless. Madison, with a railroad, will be the Utica of this State, and will make old Dane the Genesee county. The railroad will soon arrive at our borders—will this county do anything to extend its progress?

Decision of character is essential to the farmer's success; to decide and to execute, is an important item in the affairs of life. Decision is the grand secret of success; it is allied to firmness; it is never borne down by pleasure, apathy, or indolence. The farmer who cannot rise with the glorious sun, and who takes no care that his implements are in order until the time of action, will never come off victorious. The loss of one day, in the crisis of affairs, sometimes works a serious loss, besides the sinking of those high hopes and that buoyant courage which disastrous management always produces. The loss of a crop from neglect at the proper time to secure good seed, from deferring to some other time, the present duty of replacing a single loose board or a rail, from neglect to manure the soil, or to properly cultivate it, causes the worn, thread-bare exclamation, "farming won't pay." The Creator gave this beautiful earth to man to cultivate, gave him his divine image, and made him lord of this goodly heritage. He endowed him with strength to subdue the thorns and thistles; with a capacity to plan, to comprehend, and to execute His great command, "In the sweat of thy brow shalt thou eat bread." To live without labor is impossible; industry promotes longevity and happiness, and will most certainly repay a bountiful return, so long as the rainbow decks the heavens, and seed time and harvest do not fail.

But at no time of our national existence has there been such a wide-spread effort as at present, to improve the standard of agriculture. Recently a National Agricultural Society has been formed at Washington. The rural seats of Mount Vernon, Hermitage, Ashland and Marshfield, rich in the display of agricultural taste and beauty, are evidences that war and politics cannot satisfy the mind; but that it must turn from ambition and strife to gratify its love of nature. Earth was made for man to cultivate, and man was made to till the earth. It is the material with which we have to do, a great laboratory undergoing ceaseless changes, which the farmer ought to understand. Science has done much for agriculture; she has multiplied labor a thousand fold, and brings distant markets to our very doors. Patronize science—let the hard-fisted farmer enter and worship in its temples. Do not consider colleges as made for a favored few, or as fitting the young to live without labor—let us march boldly through its portals, and take their key of knowledge to unlock the treasures of earth. Chemical science will analyze our soils, and tell us what they need to improve their fertility. To counteract the deficiency of the unequal value of labor, we must, by a more careful and improved husbandry, treble the quantity produced, make two blades of grass grow instead of one, and stretch forward the internal improvements. Spain has fewer railroads than any other civilized nation; look at Spain! The United States has more than any other nation; and what national prosperity can be compared to hers? The union is awake to this subject, and Wisconsin must not be in the rear.

I adverted to the inequality in the price of labor, as bearing heavily on the farmer. To raise wheat at forty cents a bushel, with a saving profit, the quantity must be increased by superior cultivation. To grow wheat a man must know how to do it, for it requires the same thought and study as an argumentative brief, or an agricultural address, or a pattern for iron castings. Farming is reason in action; it cannot be conducted without science and method, any better than a tool can be employed in any trade without being fitted to its use. A clay soil is said to be the best soil for wheat, and yet it may be so compact and adhesive, that unless mixed with leached ashes, lime or sand, or unless the subsoil is mellowed for the top roots to penetrate, the fibrous or lateral shoots of the plant are in danger of perishing by exposure to the frost uncovered as they will be by the winds, without this preparation; or unless the proper relative elementary proportions are in the soil it will be unproductive, labor is lost upon it. I will in this place mention an experiment made by a farmer, by sowing oats with wheat. He sowed three different pieces of wheat on ground prepared alike. On the first piece he sowed with the wheat, one bushel of oats per acre, on the second half a bushel, and on the third no oats at all. The same kind and quantity of wheat was sown on each. The first piece was good without any chess, the second piece was a middling crop, with a little chess, and the third piece was nearly all chess.

To remedy the disproportion between the cost of production and the price of the article, we must study to improve its cultivation. Neither grain, nor stock, nor fruit, can be advantageously cultivated without study and observation; we are not born with any intuitive knowledge; as well might a farmer attempt to amputate a limb with surgical skill, as to attempt the right management of the soil without education. The manual labor may be done, but the adaptation of means to ends demands as much foresight and quickness of perception, and as much science, though of a different quality, as the projection of a cannon ball at a distant object, or the storming of a fortification; and though the landed interest pays three-fourths of the taxes, we have no agricultural schools, no model farms, no scientific farmers, supported at the public expense, while military and naval schools are amply endowed. We are an Agricultural State. Wisconsin is a commonwealth of farmers, and the State University at Madison presents now a glorious opportunity of connecting with it, and endowing an agricultural school, and combining practical and scientific farming.

When the Erie Canal was projected, the Eastern farmers were frightfully apprehensive that the immense volume of freight which it was foreseen would be transported from the West, would reduce the price of their lands. But it has been made and enlarged, and yet it is not equal to the task; but railroads have been constructed at an astonishing expense, to aid in forwarding the enormous burthens which are transmitted to and from the West; and still, lands in all the New England states have augmented in value. It is intimated that the lands in Massachusetts have risen enough in value to defray the expenses of their railroads. How is this? Manufactories have sprung up all over the land. They send us their clocks, buttons, hats and pins, and every thing we use. Their purses are full of gold to buy our wool, our cheese and our pork. By the census of 1850, from 124,892 sheep, Wisconsin sheared 253,963 pounds of wool, the average weight of fleece was two pounds, less than Iowa by more than 100,000 pounds. Ohio sheared over 10,000,000 pounds. The average weight of fleece in Vermont, was three pounds eleven ounces. We have not capital for manufacturing, though we have a good soil.

Manufacturers study their own interest; so must agriculturists. Manufacturers have secrets; immense quantities of corn are converted into starch, but the art is a secret, and visitors are excluded from that branch. Farmers have no secrets; but a portion of that knowledge, which is sought for in commerce and manufactures, we must have, that agriculture may take its proper rank, as it is the basis and support of all others.

Mr. Allen in his Rural Architecture, makes the following sensible remarks upon the necessity of ladies identifying themselves with agricultural pursuits, and attaining a knowledge and taste in the business, which their husbands, fathers and brothers are striving to elevate, to make profitable and ennobling:

"Nor is this laudable taste confined to men alone. Females of the highest worth, and domestic example both abroad and at home, cultivate a love for such objects and take much interest in the welfare of their farm stock. We were at the annual cattle show in one of our large States, but a short time since, and in loitering about the cattle quarter of the grounds, met a lady of our acquaintance, with a party of her female friends, on a tour of inspection among the beautiful Short Horns and Devons, and the select varieties of sheep. She was the daughter of a distinguished Statesman, who was also a large farmer, and a patron of great liberality in the promotion of fine stock in his own State. She was bred upon the farm, and to rare accomplishments in education, was possessed of a deep love for all rural objects; and in the stock of the farm she took a peculiar interest. Her husband was an extensive farmer, and a noted breeder of fine animals. She had her own farm too, and cattle upon it, equally as choice as his, in her own right; and they were both competitors at the annual exhibitions. At her most comfortable and hospitable residence she showed us with pride, the several cups and other articles of plate which her family had won as prizes at the Agricultural Exhibitions, and which she intended to preserve as heir-looms to her children. From the bottom of our heart, we trust that a reformation is at work among our American women, in the promotion of a taste; and not only a taste, but a genuine love of things connected with country life. It was not so with the mothers and the wives of the stern and earnest men who laid the foundation of their country's freedom and greatness. They were women of soul, character and stamina, who grappled with the realities of life, in their labors, and enjoyed its pleasures with truth and honesty. This over-nice, mincing delicacy and sentimentality in which their grand-daughters indulge, is but the off-throw of the boarding school, the novelist and the prude, mere 'leather and prunella.'

"One lady horticulturist, according to the Norfolk Va. Argus, is alone cultivating thirty acres of land in stawberries, and employs fifty pickers, for the northern cities. Eve was the flower of the garden, and without her it would not have been Paradise. She watered and nourished the plants and trained their growth. No un-wifed farmer can show a clean garden. Like himself, it will always be unwed. The domestic example, comfort and endearment which woman gives to home, is the best volume of memoirs for children to read. The noble second which a good wife gives to the farmer's efforts, stimulates the wavering, revives sinking hopes, and softens arduous toil. 'She layeth her hands to the spindle, and her hands hold the distaff. Her children rise up and call her blessed, and her husband he praiseth her.'"

And now, farmers, let us hold fast to our profession, it is one which admits of progress; you are the bone and sinew of the land; you stand upon the soil, and every year augment the wealth of the nation,. Other classes are the consumers, the exchangers. You furnish the means and the supply. Our profession demands the highest order of intellect and virtue. We must not discard science, for she is the hand-maid of agriculture. Investigation is necessary to our progress. Ascertained facts are the data on which we must frame our theories. Agricultural works assist inquiry, and at our next exhibition let us make the Society worthy of Dane county and of ourselves.

FOND DU LAC.

A Meeting was held at Rosendale, on the fifth day of July, 1852, in accordance with a notice previously given, for the purpose of taking measures for the organization of a County Agricultural Society. At this meeting, H. W. Walcott, Esq., of Rosendale, presided, and Storrs Hall, M. D., acted as Secretary. After the appointment of a Committee to prepare a suitable Constitution, the Meeting adjourned to Saturday, July 17th.

On re-assembling, a Constitution was reported and adopted, and the following persons chosen to fill the various offices for the current year: President, Hon. N. M. Donaldson, Waupun; Vice Presidents, Charles F. Hammond, 2d, West Rosendale; Robert Jenkinson, Metomon, and John Elwell, Taychedah; Recording Secretary, Storrs Hall, M. D., Rosendale; Corresponding Secretary, Elliot Brown, M. D., Lamartine; Treasurer, S. N. Hawes, Fond du Lac. By the Constitution, these officers constitute a Board of Directors, having in charge the general interests of the Society.

At a meeting of the Directors, held July 27th, 1852, it was resolved that the first Annual Cattle Show and Fair should be held at Rosendale, on the 29th and 30th days of September.

Of this Fair, the Secretary, Dr. Hall, thus speaks:

"The first Annual Fair and Cattle Show of the Fond du Lac County Agricultural Society, was held at Rosendale, on the 29th and 30th of September, 1852. The attendance of the farmers and others interested in the progress of agricultural pursuits, was very large—far exceeding the fondest anticipations of the friends of the Society. Less than three months had passed since the first formation of the Society, consequently a sufficient time had not elapsed for suitable notice to be given, or efficient preparations to be made; but, judging from this first effort of the Society, in its infant state, and laboring under all the disadvantages of circumstances, we may hope and trust that it will not, in its maturer growth, and under more favorable circumstances, fall short of the exhibitions of Societies of a similar character in this, or even in older States.

"The county is but newly settled; the Indian's trail is not wholly effaced within our bounds, and vast portions of our territory are still unoccupied and uncultivated. Our Fair has been but a faint shadow of what it is destined to become; and yet it goes far to exhibit the energy which characterizes the settlers of this region.

"There were entered, in competition for premiums, about two hundred and fifty different articles; embracing a very large portion of the various products of the farm.

"An Address was delivered, extemporaneously, on the first day of the Fair, by Edward Daniels, Esq., of Ceresco. The Address was able and interesting; and made a good impression upon the agricultural portion of our community.

"The Board of Directors hesitated for a long time, as to the expediency of holding a Fair the present year. The want of funds, the unprepared state of the public mind, and the uncertainty of success; the difficulties which have surrounded the farmers of this region for some years; and the entire absence of special efforts for preparation, were reasons that weighed heavily against the apparent practicability of the enterprise. The days were named, not without fears for its success. The result, however, shows that the conclusions of the directors were right, for the Fair exceeded, beyond all comparison, their most sanguine anticipations.

"The receipts of the Society, since its formation, have been $86 82, and the expenditures have been about the same amount."

IOWA.

No report has been received of the proceedings of the Iowa County Agricultural Society, during the past year, and it is believed that but little has been done by it towards carrying out the ends of its formation.

JEFFERSON AND DODGE.

WATERTOWN, December 6, 1852.

DEAR SIR:—A notice appeared in the Watertown papers, for two or three weeks previous to the 18th day of February, 1852, requesting the farmers and mechanics of the counties of Jefferson and Dodge to meet on the day named, in the village of Watertown, for the purpose of forming an Agricultural Association. At the meeting, the attendance was meagre. Some four or five farmers appeared from

Dodge county, and about the same number of mechanics, merchants and manufacturers from Watertown. Those who had been the most active in getting up the meeting, were almost discouraged by the indifference which, it was but too apparent, was felt by those most deeply interested in the objects which it had been called to promote. Nevertheless, it was determined to form an Association, to be known and designated as the "Jefferson and Dodge County Agricultural Society." A Constitution was adopted, similar to that of most of the other County Agricultural Societies, with the additional clause that "each *bona fide* member shall receive, at the expense of the Society, an Agricultural paper published in this State, subject only to postage."

The Constitution was signed by the eleven persons present; after which the following officers, for the then ensuing year, were elected: President, Allen H. Atwater, of Oak Grove; Secretary, J. A. Hadley, of Watertown; Treasurer, Luther A. Cole, of Watertown; Executive Committee, William M. Dennis and Benjamin Fuller, of Dodge county; Linus R. Cady and John Richards, of Jefferson county. The Executive Committee then appointed one Vice-President for each town in the two counties.

A meeting of the Executive Committee was held at Watertown on the 21st day of August following, at which it was resolved to hold a Cattle Show and Fair at Oak Grove, on the 2d day of October. At the same meeting, Committees to award premiums were appointed.

The First Annual Fair was held agreeably to appointment. At this exhibition the display of horses, cattle, swine, and sheep, was highly creditable to the farmers of the two counties. Of domestic manufactures, farming implements, fruit, and vegetables, the competition was less than had been expected. The amount of premiums awarded was $54 63. The highest premium was $1 75, and the lowest twenty-five cents. After paying these premiums, and other expenses of the Society, including papers to its members, the treasurer found in his hand a balance of $5 68. His total receipts had been $75. Sixty-four members were added to the Society on the day of the Fair, making the total number of members up to that date. seventy-five.

The attendance upon the Fair was large. There could not have been less than one thousand five hundred or two thousand persons present. On the whole, the Fair gave very general satiafaction. That it has excited a spirit of laudable emulation on the part of the farmers and mechanics of the two counties, the good fruits of which will be developed at future Fairs, the members and friends of the Society have the best reasons for believing.

Yours truly,

J. A. HADLEY,

Sec. of Jefferson and Dodge Agr. Society.

To ALBERT C. INGHAM, Esq.

Sec. of the Wis. State Agr. Society.

KENOSHA.

KENOSHA, December 10, 1852.

DEAR SIR :—The Kenosha County Agricultural Society continues in a flourishing condition. We hold our meetings quarterly, at which there is generally a good attendance, and an abiding interest is kept up. We feel encouraged to go on in the good work, for we see that the best results are being produced, and we shall claim, ere long, to be the banner county of the State, if we are not already entitled to the appellation, for we were the first to begin the work, and trust to be the last to abandon it.

By a change in our Constitution, our annual meeting was held on the first Monday in December, when the following persons were elected officers for the ensuing year:

President, Leonard Crocker, of Somers; Vice Presidents, Levi Grant, of Bristol, and G. J. Pease, of Salem ; Treasurer, George N. Towslee, of Kenosha ; Recording Secretary, Frederick J. Brand, of Pleasant Prairie ; Corresponding Secretary, T. J. Rand, of Kenosha.

At this meeting, we awarded premiums on field crops, seeds and grain, and voted to hold the next Fair at Kenosha.

This Society held its Annual Fair at Bristol, on Thursday and Friday, September 30th, and October 1st, 1852 ; at which time, notwithstanding the location, which was somewhat out of the way, there was a large attendance. The Show lasted two days ; on the second day there was supposed to be over four thousand people on the grounds. The show of horses, cattle. and implements, was good. The Floral and Horticultural Show was superior for this new State, and the ladies' department was peculiarly excellent ; they, I am happy to state, take a great interest in our Fairs. There were two hundred entries for premiums, and one hundred and fourteen awards, paid in cash and diplomas, without including the entries or awards on crops, seeds, &c.

There were some persons who did not take sheep and other stock to our Fair this year, because they had received premiums in previous years, and were not entitled, by the rules of the Society, to compete again in the same class. This is not, in my opinion, a sufficient reason for not exhibiting these animals. Good stock should be shown, whether entitled to a premium or not. We cannot see a handsome animal too often.

While on the subject of Agriculture, I cannot forbear to mention the 'Exchange Fairs.' We think more of this Fair, in its practical uses, than of any other of our meetings. In my report of last year, I explained its utility and importance, and would again commend it to the attention of all County Societies.

The prospects of the success for some years to come of agricultural pursuits in this State are flattering; and now is the time to get the farmers enlisted in the work of Agricultural Societies. And allow me to recommend Farmer's Clubs. Many evenings in the winter might be profitably spent in club meetings for the exchange of views on the subjects of farming. As well might a man undertake to navigate a ship to India without a knowledge of the science of navigation, as to undertake to produce favorable results from farming, without books, and without an exchange of opinions with others. The easiest, cheapest, and most direct way of obtaining this knowledge, so important to the successful farmer, is by establishing clubs, with useful libraries attached. We see that almost every profession, business, or trade in life, has its associations for mutual improvement, while Agriculture—the most important of them all—folds her arms, and is content to walk in the paths of her forefathers, even as far back as the dark ages. It is time to awaken; the age of improvement is fast leaving us in the rear.

Yours truly,

T. J. RAND,

Cor. Sec. Kenosha Co. Agr. Society.

To Albert C. Ingham, Esq.

Sec. of the Wis. State Agr. Society.

ADDRESS BY HON. SAMUEL R. McCLELLAN,

PRESIDENT OF THE KENOSHA COUNTY AGRICULTURAL SOCIETY.

Ladies and Gentlemen :—Time, in its onward course, has brought about another year. Again we have assembled as the Agricultural Society of the county of Kenosha, and again by your partiality it is made my duty to address you.

I could have wished your choice had fallen upon some one abler, and more conversant than myself with that science, which it is the object of this Society to promote. And I can only say that were my knowledge of agriculture equal to my love for it, then could I talk with you upon this theme until your patience were wearied. But this, unfortunately, is not so. The best years of my life were spent in a far different pursuit.

> "Me they sent
> To wait on pain, and silent arts to urge,
> Inglorious, not ignoble ; my cares,
> To ease such as languish on a grievious bed,
> And the sweet forgetfulness of ill conciliate."

It is but a few short years since I came among you, a novice in the science and art of agriculture.

And I take this occasion to acknowledge the obligations I am under to this Society for the many lessons of practical importance I have learned at our several meetings. Yet, even to this day, I feel that I have but just entered the vestibule of the temple of Ceres, though enough has already been unfolded to my view to satisfy me that the science of agriculture is of importance sufficient to engage the attention of the ablest minds.

The science of Agriculture ! What is it ? It is emphatically the basis of civilization, the foundation of all other sciences, embracing within its scope a knowledge not only of the earth and its minerals, but also of its vegetable and animal productions. This is not all. Everything incident to, or connected with the production and growth of vegetables and animals, their preservation and their diseases, their decomposition and their reproduction are all embraced in the science of Agriculture.

What science more interesting ? What science more noble ? What science more neglected ?

I propose to say a few words upon the causes of this neglect, and the remedy. An all-wise and beneficent Providence has so ordained that by natural causes, our soil is fitted originally with all the necessary properties for vegetable productions, and from the immense quantities of virgin soil constantly being brought into a state of cultivation and improvement by the hardy sons of toil, in all parts of our extensive country, our agricultural products are so large, that we entirely overlook the necessity of retaining the natural fertility of our soils, or of increasing the aggregate amount of our products.

The consequence is, we have lost at least half a century in agricultural progress; and although we have outstripped the nations of the old world in many branches of science, yet in agriculture we are far behind them.

Still I hazard the assertion, that no nation has originated more new ideas in relation to the science of Agriculture than our own, but owing to the want of popular sympathy, and a fountain head charged with the duty of collecting and distributing information to stimulate and encourage enterprise and experiment, thus drawing to a common centre the results of individual skill and observation, and thence diffusing them throughout the length and breadth of our extended country, these valuable ideas have been neglected, and in a measure lost.

Compared with other nations, what has America done for the cause of Agriculture?

There are in Europe upwards of three hundred and fifty schools and colleges, exclusively agricultural, even despotic Russia has sixty-eight schools of Agriculture, while in the United States, not a single Institution of the kind exists!

By the late census of 1850, it appears that the people of these United States have invested $552,705,238 in domestic animals; and yet, if a young man about to engage in stock-growing, wishes to study the anatomy of the horse or any other animal, there is not a museum in all America where this can be done!

No man supposes for an instant, that we can learn the anatomy and physiology of man from books. No, we must make dissections, we must have occular demonstrations, and valuable museums, to illustrate all parts of the system both in a healthy and a diseased condition.

And just in proportion to the importance of the subject, the one is as necessary as the other. We have in this country over thirty millions of sheep, and between five and six millions of cows which yield us the product of the dairy. Will any reasonable man say that a knowledge of all this living machinery can be of no value to the country? Shall we continue to grope our way in the dark, depending upon foreign countries for information upon a subject of so much moment as this? For the honor of my countrymen I trust it will not be. And I am happy to state that within the past few years an increased attention has been paid to the science of agriculture, and we have reason to hope a brighter day is about to dawn.

The importance of establishing an Agricultural Bureau was discussed, and found many able advocates, in the present Congress. A National Agricultural Convention was held at Washington during the past summer, the result of which was, the formation of the United States Agricultural Society. And in this Convention no less than twenty three States and Territories were represented.

Thus we see that public sentiment has been awakened upon the subject, and we have now but to combine and organize State and County Agricutural Societies, and bring our strength to bear on the advancement of this noble science, and our purpose is accomplished. If we remain divided and isolated our moral force will be lost. We must bring the science of combination to bear upon our purpose. State and County Societies, if they would unite their influence, have now the power to induce Congress to do something for us. It is vain to expect politicians to take the lead in this matter, they must be pressed into it by public sentiment. Great measures of reform can only progress *pari passu* with enlightened public sentiment. Individuals, it is true, are frequently in advance of the age in which they live, but their ideas can only be carried out as fast as public sympathy appreciate them.

Hartlib pointed out the advantages of a National Board of Agriculture to the inhabitants of Great Britain, a century before it was established by the indefatigable exertions of Sir John Sinclair.

Washington, the father of his country, and a practical farmer, recommended the establishment of an Agricultural Bureau in several of his messages to Congress. It was a subject on which he ever expressed the liveliest interest, and upon which he loved to dwell.

In his correspondence with Mr. Sinclair, speaking of the British Board of Agriculture, he says:

"From the first intimation you were pleased to give me of this institution, I conceived the most favorable ideas of its utility. And the more I have seen and reflected on the plan since, the more I become convinced of its importance, in a national point of view, not only to your own country, but to all others which are not too much attached to old and bad habits to forsake them, and to new countries that are just beginning to form systems for the improvement of their husbandry."

This was the deliberate opinion of a man, whose name no true American can mention without feelings of profound veneration.

In my last Annual Address, I suggested the idea of a State Board of Agriculture, and although nothing has yet been done, I am still impressed with the importance of that measure.

That the agricultural interest is one of vast importance to our country, is being more and more realized with each succeeding year; and this not only from the great numbers engaged in it, but also from the various relations sustained by the class who compose it, and the influence of the products of their industry on our general prosperity as a nation.

Subtract from our resources our agricultural productions, and a wide void would be made.

The great question, then, as to what will best promote our prosperity as an agricultural nation, is one well worthy the consideration of the legislators in all the States, and under proper regulations this object may be at tained. At a comparatively small expense each State may be possessed of a knowledge of its own resources, which would be valuable, not only in directing its own policy, but to exchange for like information from its sister States and from foreign countries. It is a knowledge of these facts, imperfect as they are, that is now giving us an increasing importance in the eyes of the nations of the old world. They are watching us with mingled feelings of admiration and envy. They see and feel the influence we are destined to exert on the progressive march of humanity.

Let then, the immense extent, the vast variety of our resources, the elements of our industry, the channels open for our future development, be spread out that they may be known and read of all men. Let facts and figures stand forth, inviting investigation, proving to the world that whatever may be the gush of passion, or the momentary excitement of party feeling, we are still mutually dependent, each State with its sisterhood and that with a wise foresight, our fathers selected our national motto. "E Pluribus Unum." May it ever be borne aloft by our American Eagle.

"Long be our fathers' temple ours,
Woe to the hand by which it falls
Departed spirits watch its towers,
While living patriots guard its walls."

I trust you will not deem it inappropriate at this time to say a few words to the young men who have chosen the profession of Agriculture. It is a noble vocation, and upon you will soon devolve the high responsibility, not only of maintaining its present position, but carrying it forward in even pace with the progress of the other sciences. The earth on which you tread is endowed with a thousand capabilities of production, which require only the fostering hand of intelligent industry to yield you the most ample returns.

In this, as in all other departments of science, "knowledge is power," and it is of the highest importance to you to make yourselves acquainted with the constitution and relations of every object around you, that you may avail yourselves of their capabilities of ministering to your comfort and happiness. And I would earnestly impress upon you the advantages of acquiring a taste for reading and habits of investigation. I know that young men are too apt to suppose, when they have finished their preliminary studies and entered upon the active duties of their calling, that they have acquired all the knowledge requisite for their proper discharge. This is a great mistake. They are then only fitted to pursue with advantage a more enlarged course of study.

In this age of cheap literature, when knowledge no longer walks the streets, as in days of yore, with uncouth wig and sable cowl, but when the portals of her temple are open wide, that all who choose may enter, you should not fail to form and cultivate a taste that will expand the mind, ennoble the faculties, strengthen the judgment, and open to you innumerable sources of rational enjoyment.

Science will inform you of the organization, the uses and the history of animated nature. It will classify, arrange, and make you familiar with every department of the vegetable kingdom. It will analyze the water that fertilizes the earth, and the invisible air by which you are surrounded. It will teach you the laws of heat, light, and electricity. It will do more. It will elevate your thoughts to the heavens, and present to your wondering minds the immensity, the distances, the revolutions and laws which govern the globes and stud the great arch above us. It will teach you that an all-wise and beneficent Creator has impressed the same unerring law on every portion of the universe, as full, as perfect on the tiny pebble which lies upon the sea shore, as on the globe we inhabit; as full, as perfect in the gentle zephyr that woos us with its soft embrace, as in the whirlwinds' crash; as full, as perfect in the lowest animal instinct as in the soul of man.

> "'Tis the same law, that moulds the tear,
> And bids it trickle from its source,
> That holds the ocean in its sphere,
> And guides the planets in their course."

To the ladies who have participated in this exhibition, I can but reiterate the sentiments of my last year's Address. We thank you for the past; we need not bespeak your continuance in well-doing for the future, for it is not in your nature to abandon a good cause when once fairly enlisted. All history, both sacred and profane, abounds with brilliant examples of the disinterestedness, the constancy, the devotedness of woman. The last at the cross, the first at the sepulchre; in the darkest hour of peril she knows not to falter. I congratulate you that your department in this exhibition has been well sustained. I bid you God speed and hail you as co-laborers with us in the upbuilding of an institution which has for its object the diffusion of knowledge, the enlightenment of society, and the amelioration of the condition of our common country.

MILWAUKEE AND WAUKESHA.

In consequence of the location of the State Fair, for the year 1852, at the city of Milwaukee, no Fair was held by the Milwaukee and Waukesha County Agricultural Society. The Society is, however, in a flourishing condition and will resume active operations at an early day. The Secretary speaks in high terms of the beneficial results flowing from the holding of the State Fair in their midst; and anticipates that much permanent advantage will accrue therefrom. The list of officers of the Society has not been furnished us.

RACINE.

The Racine County Agricultural Society, held its Annual Fair and Cattle Show at Yorkville, during the month of September, 1852. The Fair was well attended, and much enthusiasm manifested. No Report has been received of its proceedings, though it is believed to be in a prosperous condition.

ROCK.

JANESVILLE, November 25, 1852.

DEAR SIR:—The Rock County Agricultural Society and Mechanics' Institute has been in operation for two years. The experiment of sustaining a County Agricultural Society in Rock county, has now been fairly tried, and its stability and perpetuity has become one of the fixed facts in the public estimation, as it has succeeded beyond the expectations of its most sanguine friends. It has now reached a point from which one need not apprehend a retrograde movement, or entertain any fears as to its permanent existence.

It is well known that our first Annual Cattle Show and Fair was held in connection with the State Fair, at Janesville, in 1851. That was an exhibition highly creditable alike to the farmers and mechanics of our county and the State generally. From that time forward, until our last Annual Fair, many not only attributed our apparent success to our connection with the State Society at that time, but predicted a failure if we should attempt to act as an independent Society within our own county. But others, with an energy and perseverance worthy of the cause, determined to make an effort, and give a fair trial, at least, to so laudable an undertaking. Accordingly, arrangements were made for the Fair; but still the auspices seemed unfavorable, as it became necessary, for reasons which it is not necessary to explain, to hold it at one extreme of the county. This was not only inconvenient for many who wished to attend, but produced great dissatisfaction in other portions of the county. And again, the time was injudiciously selected, the circuit court being in session at the time appointed for the Fair, which necessarily detained many influential men as jurors, &c., on whom we had relied for countenance and assistance. But notwithstanding these untoward circumstances, which seemed to conspire against us, the result shows that we have abundant cause for congratulation, and even pride; for although some departments were not very fully represented, the exhibition was, on the whole, of the most commendable character, and marked throughout by a spirit which augurs well for the future. And so great is our confidence in the resources and indomitable energies of the farmers and mechanics of our county, that we throw down the gauntlet to all County Societies of the kind in the great Northwest; for we are determined not to be beat in 1853.

Here permit me to say that much credit is due to our President, Hon. Josiah F. Willard, for his unwearied efforts in placing the Society on a permanent basis, and in sustaining it. Also to Prof. S. P. Lathrop, of Beloit College, Messrs. Love and Barker, and Daniel Bennett, of Beloit; to Vice Presidents Burgess and Burdick, and E. A. Howland, Esq. of Janesville; to J. P. Dickson, Esq., our Treasurer—not forgetting J. P. Wheeler, Esq., of La Prairie, who may, with propriety, be styled the 'venerable father' of the Society—together with others, whose names we have not space to mention.

We do not expect to convey an adequate idea of the extent of the exhibition in the brief review which follows. To be appreciated, it should have been seen. We will glance lightly over each department on the show ground. The Fair was held on the 28th and 29th of September.

The people of Beloit, with a commendable liberality, fitted up the grounds surrounding their new and spacious Union School House, without expense to the Society. The grounds being enclosed by an ample board fence, not only afforded sufficient space for the exhibition of animals and specimens of the mechanic arts, but also for the accommodation of all those who wished to drive through the grounds in carriages. The School House—a beautiful three-story brick building, and an honor to the town—afforded commodious rooms for the display of articles in the Ladies' Department, the Fine Arts, &c.

Horses.—Many superb specimens of this noble and most serviceable animal attracted the attention of all. R. M. Wheeler, of Janesville, carried off the first premium for his fine stallion, "Hambletonian," which was well deserved. Messrs. Blodgett and Ruble, of Beloit, presented some very superior young stallions ; and several very fine sucking colts, presented by O. Densmore and others, together with the breeding mares exhibited, all showed that our farmers are awakening to the importance of improving our stock of horses. Several pairs of matched horses were shown, among which those of Messrs. Howland, Trask and Dickey, of Janesville, W. H. Howard, of Beloit, and D. H. Cobb, of La Prairie, were superior. Of draught horses, Messrs. Simon Ruble and G. B. Sanderson, of Beloit, J. F. Dockstader of Shopier, J. F. Willard, of Rock, and F. S. Eldred, of Johnstown, probably offered the best, although a great number of others on the ground were very fine. On the whole, the show in this department was very good.

NEAT STOCK.—C. Loftus Martin, of Turtle, received the first premium on Durham bulls, and it was well merited, although "Old Taurus" was well represented by animals presented by M. P. Cogswell and Yost Roberts, of Beloit; Jonathan Cory, of Centre; Jesse Mills, of Janesville; F. Hitchcock, of La Prairie, and others. The working oxen were few in number, although several fine pairs were on the ground, especially three pairs presented by Judge C. R. Gibbs, of Harmony. Several fine Durham cows and fat cattle were exhibited which were a credit to their owners, among which we particularly noticed one owned by F. Hitchcock, of La Prairie, which was very fine; G. W. Bicknell, of Beloit, and Peter McVane, of Newark, also presented good animals.

SHEEP.—The exhibition in this department was better than was expected. Several pens were on the ground, among which, those belonging to Levi St. John of La Prairie, N. P. Benson and John A. Fletcher of Johnstown, and E. Bradley of Turtle, were superior, and gave good evidence of discrimination and skill on the part of the wool-growers of this section. And we may add, though it may not be generally known abroad, that Rock County possesses all the requisites necessary to become one of the best wool-growing sections of the world.

SWINE.—This class was also finely represented, both in numbers and quality. Several were large, sleek, and dignified; and seemed to grunt a hearty vote of thanks to the good people of Beloit, for the bountiful fare provided for them during their visit.

POULTRY.—Next in order we notice the poultry. This department was highly creditable to the exhibitors, individual representations being present, with their progeny, from the various tribes of Shanghais, Cochin Chinas, Hamburgs, Chittagongs, Black and White Polands, &c. We think much credit is due to Prof. S. P. Lathrop of Beloit, Messrs. Willard of Rock, Chase of Janesville, and others, for the pains they have taken to introduce the superior breeds of fowls into our county.

FARM PRODUCTS.—Beautiful samples of winter wheat were presented by several gentlemen. Robert Taylor of Spring Valley, and S. A. Murray of Turtle, made the best show. Mr. Taylor had five acres of red chaff bald, which yielded thirty-one bushels per acre. Mr. Murray had nine acres of Genesee white flint, which yielded about thirty bushels per acre. In flax raising, Daniel Bennett alone competed; one acre yielded 2,775 lb of straw and about ten bushels of seed. Many excellent specimens of other farm and garden vegetables were shown, and the show in this department was highly gratifying.

FRUITS.—The fruit-growers of this county are deserving of distinguished credit. Among the first on the list is James Caldwell, of Janesville, for six beautiful varieties of plums, of very superior quality and size ; and J. Roberts, of Beloit ; William Spaulding, of Harmony, and H. T. Woodward, Jr., for specimens of apples, grapes, &c., proving that our county is capable of producing as good fruit as any other in the same latitude.

FARMING IMPLEMENTS.—In as brief a report as this must necessarily be, it will be impossible to do justice to the exhibitors in this department. The Committee say, in reference to the mowing and reaping machines of Messrs. Barker & Love, of Beloit, "that they are excellent, and that the efforts of those gentlemen to serve the farming community, have been highly successful, and creditable to themselves as machinists and mechanics, as well as to the county. Messrs. Parker & Stone presented fine specimens of hoes and hay-forks of their own manufacture ; and J. M. Riker, of Janesville and A. P. Allis, of Beloit, exhibited beautiful specimens of harness work. S. T. Merrill, of Beloit, exhibited a fine specimen of paper, of his own manufacture ; and H. D. Waterman, of Beloit, some elegant specimens of copper and tin ware.

DAIRY PRODUCTS.—The beautiful sample of butter, presented by Mrs. Rufus Clarke, of Beloit, will not be soon forgotten by those who saw it. Other very fine samples were presented by Daniel Bennett, Edward Bradley, F. S. Eldred, S. A. Murray, E. Thornbury, D. Blodgett, and others. Of cheese, F. S. Eldred, of Johnstown, evidently bore off the palm, both as to quantity and quality, although several very fine samples were presented by others.

FARMS AND GARDENS.—In this department the report of the Committee is presented, accompanied by a statement from Mr. J. F. Willard, who was the successful competitor, and received the award of the Committee, both on the Farm and the Flower Garden ;

[The following is an extract from the report of the Committee on Farms and Gardens] :

"The Committee visited the farm and flower garden of J. F. Willard, Esq., of Rock. This farm is situated on the east side of Rock River, about two miles below Janesville, and contains about three hundred and forty acres, with a road running from north to south through it, leaving about one hundred acres west of the road, on which, and near the road, are located the farm buildings, consisting of an ordinary sized dwelling, known as the 'Forest Cottage,' neatly constructed, and admirably arranged for utility and convenience, while within, there seems to be 'a place for everything, and everything in its place.'

"There is also a horse-barn, granary, and other out-buildings, the arrangements of which are in excellent taste. On the top of the horse barn is an observatory, from which the proprietor can at any time overlook the whole premises, and from which a magnificent view can be obtained of one of those beautiful landscapes, so characteristic of Rock County, and stretching for miles in every direction. There is also, on this part of the farm, a fruit garden, containing a large number of thrifty young trees, well cultivated, among which your Committee noticed the Peach, Plum, Cherry, Apple, Siberian Crab, &c., all of which, together with the buildings, are judiciously arranged, exhibiting evidence of skill and taste worthy of imitation. This part of the farm is mostly covered with 'oak openings,' and is used mostly for pasturage, furnishing a delightful shade for buildings and stock. It is watered by Rock River, which forms its western boundary.

"On the east side of the road, the land is mostly prairie, nearly level, with about two hundred and forty acres enclosed in one field. The Committee noticed about a mile of living fence, mostly locusts, with a piece of native thorn fence; the balance of about two miles consists of rails, stakes with capping, timber set in a trench, &c. There are a few acres of locusts sown broadcast for timber. There is also a thrifty young orchard, of about one hundred and fifty apple trees, doing well; and a moveable granary, which can be easily removed to any part of the farm, to receive the grain when threshed, thereby saving a great amount of labor in the hurrying time of harvest, by avoiding the necessity of hauling grain a great distance to any given point. We also noticed the arrangement of crops, such as corn, oats, wheat, beautiful fields of clover, timothy, &c., all evincing taste in their arrangement, while the excellent state of cultivation of the farm, denotes energy and skill in execution. On the whole, the Committee consider this farm as a very good model.

"The Committee also examined the flower garden of Mr. Willard, where we found the Native and White Cedar, the English, American, Norway and Balsam Firs; the Scotch Pine, the Mountain Ash, the

Golden Willow, the Horse Chesnut, the Cypress vine, three varieties of Honeysuckles, the Flowering Almond, double and single Michigan Roses ; the Canary Bird Flower and about thirty varieties of Dahlias ; among which are 'George IV,' 'Russell Anna,' and a thousand et ceteras, delightful to the eye, and deliciously odorous ; all tastefully arranged, and giving unmistakable evidence, in many instances, of the care of a softer hand, and a finer touch than that of the 'lords of creation.' Flowers and shrubbery intermingled so as to present a tasteful appearance, as these were, should be seen to be appreciated."

Mr. Willard's Statement.

"My principal crop the present season, has been wheat; both spring and winter. The winter wheat was of the white flint variety, and yielded about twenty bushels per aere. The spring wheat was the Canada Club, Hedgerow, Italian and Black Sea varieties ; all of which I have discarded except the Canada Club, which usually yields with us, from twenty-three to twenty-seven bushels per acre. Of corn, we had twelve acres, which yielded about fifty bushels per acre, on an average, without any extra culture. It was planted on wheat stubble, usually plowed once, and cultivated principally with the horse and cultivator. I raise corn on the "flat surface" principle, seldom using a plow in cultivating it. I cut it up when it is all well glazed, and put it in shocks to harden. I think the fodder pays amply for the trouble of cutting and putting it up. Of oats, we had twenty acres, which yielded a very light crop, owing to the drought of the past season. I cut with the reaper, when quite green, and threshed with the machine ; the yield was about twenty bushels per acre. Heretofore, our oat crop has reached from fifty to sixty bushels per acre, even on inferior land. Of potatoes, we had about an acre and a quarter. Of a piece of the land, containing one-third of an acre, I kept an account of the expense of cultivation, and subjoin the items :

Seed, four bushels at 75c.	$3 00
Plowing and harrowing, man and team . .	1 00
Planting, man one day	0 75
Cultivating twice, boy and horse . . .	1 00
Hoeing same twice	1 88
Digging and storing	1 87
Cost of cultivating one-third of an acre . .	$9 50

"If we add $1 00 for the use of the land, the total cost will be $10 50. The yield was about eighty bushels, which at twenty-five cents per bushel, will amount to $20 00, leaving a profit on one-third of an acre of $9 50. The ground was of ordinary quality, and was plowed but once. The variety is what we call the Mallory potato. The balance did not yield quite as much per acre, yet they were excellent as to quality. We took a specimen of the Irish pink-eye variety to the County Fair, which drew the first premium as to size, &c.

"The usual rotation of crops practised on our farm, is as follows: First crop, wheat on sod; second, wheat on same land; third, oats; fourth, corn; fifth, spring wheat; sixth, oats; seventh, corn; then spring wheat again, and so on in the same rotation again, until we seed with grass. Timothy and clover both do excellently. I have a piece of clover ley, which has been seeded two seasons, from which I have taken four crops, two of hay and two of seed, and it shows no signs, that I can perceive, of "running out," but seems to become gradually more and more compact and thoroughly swarded. Of stock, we keep twenty-five head of neat cattle, one hundred and thirty-six sheep, fifty hogs, and flocks of poultry, turkeys, hens, and pea fowls, and milk only four cows. We employ two hired men nearly the whole year.

"I also make a practice of keeping observations of the weather, and a general memoranda of events on my farm during the year; from which, if I had time, I would give some statistics."

The ladies, the wives and the daughters of the citizens of our county, with a priseworthy zeal, contributed freely of their handiwork, in domestic manufactures, embroidery and worsted work, and the large variety of beautiful articles in their department, evinced great taste on their part, and contributed greatly to the success of the Exhibition. It would afford us pleasure to name many who exhibited articles worthy of commendation, but space will not admit. Their presence, and the interest they manifested, was not only an honor to themselves, but gave assurance that the Agricultural Society and Mechanics' Institute would prosper, if its success depended upon their countenance and efforts.

At two o'clock, P. M., of the second day of the fair, the President, Hon. J. F. Willard, delivered his Annual Address to a very large and attentive audience. The production was an elegant dissertation on Agriculture, its resources, its objects, and the proper course to be pursued by the agriculturists, as viewed by a scientific and practical farmer. It contained many views and suggestions which were not only creditable to the speaker, but which will be found useful to the Society, and to the community.

Immediately after the delivery of the Address, the Treasurer made his report, by which it appeared that the receipts during the Fair amounted to nearly $350, making the amount in the Treasury $430. After paying premiums, and all other expenses, there is now in the Treasury about $70 00.

It is estimated that three thousand persons were present on the Fair grounds. The exhibition passed off well—the utmost good feeling prevailed, and it is believed that the multitude, after a friendly and praiseworthy competition for the prizes, dispersed, fully convinced of the utility of the Society. We feel that the people of Beloit deserve the thanks of *all* for the hospitable manner in which they entertained their numerous visitors, and the exertions they made to make the Exhibition interesting and to contribute to the comfort of those who attended it.

At our Annual Meeting, the Board of Officers was chosen for the ensuing year, as follows: President, Josiah F. Willard; Vice Presidents, Charles R. Gibbs, Ezra A. Foote, Daniel Bennett, S. P. Lathrop, Jesse Mills and E. A. Howland; Recording Secretary, Orrin Guernsey; Corresponding Secretary and Librarian, Mark Miller; Treasurer, James M. Burgess. A Board of Directors was also appointed—one from each town in the county.

I am, Sir, truly yours,
ORRIN GUERNSEY,
Rec. Sec. Rock Co. Agr. Society.

To ALBERT C. INGHAM, Esq.,
Sec. of the Wis. State Agr. Society.

SHEBOYGAN.

SHEBOYGAN, December 21, 1853.

DEAR SIR:—The Second Annual Fair of the Sheboygan County Agricultural Society was held at the town of Plymouth, on the 13th day of October last, but owing to the very bad state of the weather and the roads, the attendance was not large, nor the entries as numerous as they otherwise would have been.

The entries were composed almost entirely of agricultural products, and the marked improvement that was manifested over the display of the preceding year was such as to cheer and encourage all who feel an interest in the prosperity of this portion of the State, and gave a practical demonstration of the productive capacity of this county, quite beyond the expectations of many of our citizens.

It would be gratifying to us to be able to present a particular description of some of the entries that were made, but the object of this communication will not, perhaps, admit of details, and we must content ourselves with the general remark, that many of the specimens shown under the several heads, have not, either in quality or size, been surpassed in any portion of this State or country.

You will receive from Dr. J. J. Brown, on behalf of this Society, a statistical and analytical report, which we think will be found very interesting and important.

Sheboygan County won some laurels at the last State Fair, and might have won more; and we take this opportunity to say to our sister Societies in Wisconsin, that if the farmers of Sheboygan County do their duty the present year, and enter the lists in their full strength, at the next State Fair, they will make an exhibition honorable to their County and their State, and very hard to beat.

Yours respectfully,

CHARLES E. MORRIS,

Sec. Sheboygan Co. Agr. Society.

To Albert C. Ingham, Esq.,

Sec. of the Wis. State Agr. Society.

The following is the Report alluded to in the foregoing:

REMARKS ON SHEBOYGAN COUNTY.

Sheboygan, November 10, 1852.

Dear Sir:—Settlements commenced in Sheboygan County in 1835, but the depression following the speculations of 1836, prevented, for the time being, further additions; so that, in 1840, there were but 133 inhabitants in the county, and no material advancement was made until 1845, since which time our county has made rapid progress in settlements and improvements. Our population now numbers over 9,000; and 54,540 acres of the then dense and unbroken forest, have disappeared before the axe of the sturdy pioneer; while grains and grasses have waved to the breeze in their stead, to gladden and repay him for his toil. This region appears to be underlaid throughout with a grayish crystaline limestone, containing, as far as I have been able to ascertain, no fossils. At several places, it comes near the surface, and affords excellent stone for building and for lime.

Above the limestone is a stratified bed of clay, from which, near our town, is made a superior quality of cream-colored brick. This clay forms the sub-soil of a part of the county, and when mixed with the vegetable and alluvial deposits, forms a desirable and productive soil. A fair sample of this soil furnishes

Alumina	70 00
Organic matter	8 16
Silicious Sand	13 00
Carb. Lime	8 00
Water and loss	84
	100 00

Above the clay bed are strata of sand, which also form a portion of the surface of the county. The soil of this formation furnishes

Silicious sand	81 00
Organic matter	5 50
Alumina	11 00
Carb. Lime	2 50
	100 00

This gives a warm, dry soil, and when properly cultivated, it becomes a very productive one, and is easily tilled.

Another part of the surface of the county consists of ridges or hills; some of which are, I should think, at least 150 feet high, and are composed of sand, limestone, pebbles and clay confusedly mixed. The soil of this formation contains

Carb. Lime	15 25
Organic matter	7 43
Silicious sand	65 32
Alumina	12 00
	100 00

This is a dry and productive soil.

Oak is scattered over the county generally, and in some parts in larger quantities. This timber is just becoming an article of export.

During the past summer there has been sold for exportation 3,708,000 staves and spokes, and 1,853 barrels (for pork), besides timber, baskets, wagon-hubs, &c.

Ship-building has already commenced on Sheboygan river, which at present offers greater facilities for this branch of business than any other point on Lake Michigan.

Fine groves of pine abound generally on the sandy soil. Pine has been extensively exported, but home consumption has materially checked the trade. During the past summer, there have been exported 784,000 feet of pine timber; 1,218,000 feet of pine shingles, and 1,751,000 feet of pine lath.

Beech, maple, elm and basswood are abundant in every part of the county. There has been fitted for shipping, and shipped during the past year, 4,330 cords of wood. Maple, elm and hickory are extensively manufactured into chair and bedstead stuff, rakes, &c., for exportation. Tamarack and white cedar are also abundant. Heavy contracts have been made for tamarack rail-ties for southern railroads. Cherry and butternut supply but little more than is wanted for home consumption.

Wild plums, grapes, blackberries and strawberries abound in great profusion. Wild hops are also abundant and very good. We have a few cranberry marshes that produce very well.

Owing to the newness of our county, and the long time and vast amount of labor necessary to clear the land of its heavy growth of timber, its resources are but just beginning to be developed. But a small portion of the surplus wheat, barley, oats, rye and pork of this year found its way to market before the close of navigation. From this year's exports I select the following items: 427,913 ℔ potash; 1000 bushels wheat; 3000 bushels barley; 206 bushels rye; 1,600 bushels oats; 481 bushels potatoes; 119 boxes saleratus; 251 firkins butter; 1,041 bbls. flour; 25 bbls. pork; 7 bbls. eggs; 15 bbls. tallow; 40 bbls. beans; 6 bbls. maple sugar; 523 bbls. beer; 61 bundles skins; 1,116 hides.

In connection with the above figures, the fact should be stated, that but three years ago one-half of all the provisions consumed in Sheboygan county were imported.

Yours, respectfully,

J. J. BROWN.

To ALBERT C. INGHAM, Esq.

Sec. of the Wis. State Agr. Society.

WALWORTH.

ELKHORN, December 3d, 1852.

DEAR SIR:—In compliance with your request, I take great pleasure in communicating to you a brief sketch of the proceedings of the Walworth County Agricultural Society, for the year 1852.

The Society held its Annual Fair at Elkhorn, on the 28th and 29th days of September. The weather being fine, the attendance of people was much greater than on any former occasion—two thousand persons, as was estimated, were present—thus showing that the interest previously manifested in the welfare of our County Agricultural Society is steadily increasing. Many towns, entirely unrepresented last year, had a large display upon the grounds at this Fair, and received their due proportion of the premiums awarded. It is to be hoped that each succeeding year, with its Annual Fair, will bring along with it an additional effort on the part of our farmers to extend the influence of the Society, and to increase the number of its members.

The members of our Society are one hundred and fifty in number.—The number of articles for exhibition this year was about the same number. The premiums awarded amounted to nearly two hundred dollars, the Diploma being awarded as the first premium in every case, by a resolution of the Society. Two gentlemen of our county were invited by the Society to read addresses on the first day of the Fair, but being disappointed in their attendance, several gentlemen, members of the Society, upon short notice, addressed those present upon a variety of subjects; and some of these impromptu remarks would not suffer in comparison with more studied efforts upon the subjects of which they spoke. ORRA MARTIN, of Spring Prairie, was called out, and took up the subject of Fruit Culture—a matter heretofore too much neglected in Wisconsin, and especially in our own county—and did himself great credit in its discussion.

In former times, Walworth has been noted for the quantity and excellence of its wheat; but for the last two or three years, farmers have turned their attention more to the raising of stock, wool, pork, butter and cheese. Great improvement has also been made in our breeds of horses, and the exhibition in that line at our late Fair, was creditable in a high degree to the intelligent farmers of the county.

Our county is well adapted either for cropping or for pasturage. I believe, however, that the low and inadequate prices which grain has hitherto commanded, will induce our farmers to turn their attention hereafter more to stock-raising, the dairy, and wool-growing. The cultivation of the tobacco plant will also engage the attention of many of our prominent farmers, the experience of the last three years having furnished abundant evidence that the labor expended in the cultivation of this plant is better repaid than the most sanguine have anticipated. Broom corn is also extensively cultivated within our borders; and although there was no exhibition of this article at our Fair, it was solely for the reason that it was unintentionally omitted in the list of articles, for which premiums were offered. Next year, it will occupy a prominent place in the list. Flax is raised to some extent among us, and I believe that it is soon destined to receive its proper share of attention, as well for its fibre as for its seed, and that it will ere long become one of the staple products of the county. Madder is also cultivated in small quantities, and I hope it will hereafter receive more attention, as I am of the opinion that it would prove one of the best paying articles our farmers can raise. In our neighboring State, Illinois, I learn that it is becoming a staple product with many farmers, and that it pays well. The prospects are now favorable that this county will soon be crossed with railroads, affording facilities heretofore unknown to our farmers, for the cheap transportation of their products to market; and our farming interests never looked brighter than at the present time. The price which pork has commanded the past autumn, ranging as it has from $5 50 to $6 25, has gladdenned the heart of the farmer; and I have not seen, for a period of five years, so many pleasant countenances among those returning from the market, as I have seen this year, the farmer having been adequately paid for his labor and toil.

The Officers elect of our Society for the next year are:

President, Henry J. Starin, Whitewater; Vice-President, William Hollinshead, Delavan; Treasurer, Peter Golder, Elkhorn; Secretaries, Hollis Latham, Elkhorn; David Williams, Geneva; Managers, George W. Paul, Richmond; Seymour Brooks, East Troy; William Child, Spring Prairie; Lyman H. Seaver, Darien; Erastus Humphrey, Hudson.

With the warmest wishes for the prosperity of the agricultural interests of our State, and my best regards to you personally.

I am, yours truly,

EDWARD ELDERKIN, *Secretary.*

To Albert C. Ingham, Esq.
Sec. of the Wis. State Agr. Society.

WASHINGTON.

In this county, an Agricultural Society has been formed, and a Fair held during the year. The Fair was largely attended, and much interest manifested in the proceedings of the Society. Organized in a large Agricultural county, the Society cannot fail to accomplish much good. No direct report has been received of its proceedings.

MILWAUKEE HORTICULTURAL SOCIETY.

This Society has held three Exhibitions during the year, each of which was well attended. At the Annual Exhibition in September, the display was of marked and superior excellence. The Secretary remarks, that the prospects of the Society are particularly flattering; arrangements being in progress by which it will receive a valuable donation of land, through the liberality of David Ferguson, Esq., and some others of its members. This it is proposed to convert into a public, ornamental garden; thus practically inculcating lessons of taste and skill. The officers are as follows:

President, Hon. Hans Crocker; Vice-Presidents, Thomas Hislop and Charles Gifford; Corresponding Secretary, Riley N. Messenger; Recording Secretary, William H. Watson; Treasurer, David Ferguson.

COMMUNICATIONS.

RURAL HUSBANDRY IN WISCONSIN.

By George O. Tiffany, Milwaukee.

Vegetable productions, either directly or indirectly, are indispensible to the existence of man. The savage who depends entirely on the success of the chase, and the scientific farmer who summons to his aid the accumulated experience of former ages, would alike share a common fate, should our universal mother refuse us her nourishment for a brief period. The domestic animals upon which we depend for subsistence, either for their ability to aid us in the cultivation of the earth, or as food to supply the constantly occurring waste, in the complicated organization of our bodies, also demand a prominent place in the mind of the agriculturist. In speaking upon these subjects, I shall advance nothing except what has fallen under my own observation, and shall detail such experiments only as have been tried in Wisconsin, and which, under most circumstances of soil and season, and without any great departure from this latitude would be likely again to produce the same results.

In order to treat in a more condensed manner, the several branches of Agriculture, I will arrange them under their respective heads, commencing with the great staple, wheat:

WHEAT.—For the first few years after the settlement of Wisconsin had commenced, the cultivation of wheat, we may safely say, formed the principal occupation of the agricultural portion of our community. Our cattle and horses were furnished by the neighboring States of Illinois and Indiana, and often as many as thirty thousand head of animals were driven from thoses States and sold in Wisconsin yearly. Wheat forming the only agricultural product that could be exported to an Eastern market and pay for transportation, many sowed from one hundred to three hundred acres, while other branches of agriculture were abandoned in a great measure. The virgin strength of the soil was thus transported to an Eastern market, leaving the farmer at best but barely sufficient to remunerate him for his labor, and oftentimes not even that. The profits realized from the crop were *apparently* fair, but no means were used to keep the land up to its natural state of fertility, and in ninety-nine cases out of every hundred, we venture to assert that no returns were ever made to the ground for the very large stock of valuable materials carted away to distant markets. Our farmers, fortunately, perhaps providentially, were checked in this headlong race to ruin, by the partial, and in some portions, almost entire failure of the wheat crop for three or four years. These failures occurred from different causes. In some of our best wheat-growing districts, the fly appeared and made great ravages. To avoid this enemy to the wheat crop, late sowing was substituted, and that subjected the crop to rust, and consequently poor and imperfect grain was produced, diminished in quantity and inferior in quality. Finally, many concluded that the wheat crop would not pay, and pretty much abandoned its cultivation, except, perhaps, growing what might be necessary for the bread of the family. Had the truth been sought, in regard to this crop, it might easily have been seen that no price ever yet paid had compensated the farmer for abstracting the most valuable materials from his soil, and wasting his capital by diminishing the value of his land. We look, therefore, upon the partial failure of this crop, as a benefit rather than an injury, because it directed the minds of the farmer to a greater diversity of products, and turned their attention to those pursuits, which, instead of diminishing the value of the land by impoverishing it, would, by enriching the soil, add materially to its value. But it is necessary that we should raise wheat sufficient at least for our own consumption, and in order to do this wisely, let us search for the best means of accomplishing the object, without diminishing our capital by the impoverishment of our soil. All green crops, when plowed under, have been found to favor the growth of wheat. Clover, perhaps, is as good a crop for this purpose as any other, and it is often resorted to in the best wheat growing districts of the Eastern States. Owing to the uncertainty of obtaining a good stand of clover, either from drought, bad seed, or any other cause, a renovator not at all inferior can be made to supply its place, and, as I believe, at a less cost, while it is more certain and equally valuable as a manure. Sowing corn broadcast and plowing it under is the substitute we propose. Let us here institute a comparison between the two methods of renovation:

Clover Seed, one peck per acre, at $8 per bushel -	$2 00
Plowing it in, after removing the crop with which it is sown, say next season - - - - - -	2.00
	$4.00

Plowing one acre of ground for corn - - - -	$2 00
Seed, three bushels - - - - - - -	1 12
Plowing in the crop - - - - - - -	2 00
	$5 12

Yield of clover, three tons per acre. Yield of corn, six tons per acre at least. And here we have three additional tons of green manure plowed in for thirty-seven and one half cents per ton. Corn, sown in this way, is a much more certain crop than any grass seed, and it grows often where grass will not grow. Eight tons of green manure would, in my opinion, be much nearer an actual yield in most soils for corn than six tons, as corn, if cut and drawn off before the grain is formed, does not impoverish the soil.

Mr. J. J. Thomas, of Macedon, N. Y., says in a communication to the Commissioner of the Patent Office, on this subject: "Corn sown broadcast, appears to add to, rather than diminish the fertility of the soil. Of three successive crops (without manure), each was larger than the preceding one; yielding from four to six tons per acre of dried fodder." Hence we may safely infer that a large portion of the nutriment of the corn crop, previous to the formation of the grain, is drawn from the atmosphere. The statement of Mr. Thomas, corresponds with my own experience on this subject; as upon a piece of ground sowed last year and this year in the above manner, the last crop is one-third heavier than the first crop, and that without any manure. Enriching the soil by barn-yard manure alone, can only be done to a very limited extent, unless in the vicinity of large towns. From thirty to forty loads per acre are required, to produce the beneficial effect of one green crop plowed in as above described. The difference in expense is obvious; thirty loads, including work of drawing, spreading, &c., would cost at least fifty cents per load, or fifteen dollars per acre; a difference in favor of green crops of at least ten dollars per acre.

The usual time for sowing wheat has been from the twenty-fifth of August to the twenty-fifth of September; and sometimes later. We have found for a series of years that the first week in September is preferable, all things considered. If sown earlier, it is liable to become, in autumn, of too luxuriant growth, and requires to be fed down with cattle or horses, which often injure the crop with their weight, especially if the season is wet; lighter animals, sheep for example, eat into the roots of the young plants, and make great havoc, if left for any period. Late sowing leaves the crop liable to rust; late sowing is the only remedy within my knowledge against the fly; and so far as my experience extends, it is worse than no sowing at all, being labor thrown away in nine cases out of ten. The fly having disappeared entirely from this part of the country, we may again anticipate good crops of wheat. Smut annually causes much loss; and smutty wheat often causes severe and sometimes fatal sickness. The remedy is simple, cheap and effectual, and it should be widely known. The following preparation may be relied upon as a specific: 2 oz. blue vitriol, dissolved in hot water, (in which it will dissolve much more readily) is sufficient for one bushel of wheat. Wet the wheat by putting half a bushel in a basket, and dipping it in a tub of water, then put it on a barn floor and pour the solution on the wheat, and stir it up so that the vitriolized water comes in contact with each grain of wheat; which it will do very readily, wetting the wheat aiding very materially in quickening the process, then shovel it aside and take another basket. Two hands will, in this way, prepare forty or fifty bushels in half a day. The expense is trifling, when compared with the benefit derived, and the remedy is effectual. Many other recipes have been given, such as the lye of wood ashes, &c., but they cannot be relied upon. Chess can be very much lessened by sowing wheat free from it, and sowing only on ground free from wet or moist spots. The following experiment has convinced me that wet ground will produce chess from wheat: In 1844, I cleaned my seed wheat with a hand seive, by the pint or half pint at a time. With seed thus prepared, I sowed two and a-half acres on ground which had never had a crop of wheat grown upon it, having cleared the timber off myself. Through the centre of this land ran a wet strip, about two rods wide, the leaching of a small marsh. When I harvested this crop, there was not a head of chess in any part of the field, except in this wet ground; and on that there was nothing else save a few scattering heads of wheat. The balance of the ground was very dry, and the wheat on it yielded twenty-five bushels per acre. I have other fields with wet spots in them where corn has been planted, but I have never known chess to spring up unless wheat had been on the ground, or chess itself had been scattered.

Indian Corn.—This valuable grain is becoming much more generally cultivated than formerly, and in point of utility is second only to wheat, if indeed we should assign it that station. It was extensively cultivated by the aboriginal inhabitants of Wisconsin; and in times of scarcity of game, formed their only dependence to shield them from starvation. The remains of ancient corn plantations, cultivated either by the ancestors of the present tribes of Indians, or by some other people formerly in possession of the land, are often seen in the vicinity of Milwaukee. The hills, now overgrown with trees and bushes, but still perfectly retaining their distinctive shape and form; and by the age of the trees, furnishing evidence that the cultivation took place at least five hundred years ago.

The cultivation of corn is easy, and but little labor is necessary, when compared with that required by the same crop in the Eastern States. Greensward, plowed under with two yoke of oxen, which will give strength sufficient to plow to the depth of six or eight inches, then harrowed lengthwise with the furrows, and planted in rows from three and a half feet to four feet apart, will make a good corn-field. The plowing may be done either in the autumn or spring, as convenience may require. Plant in the month of May, from the tenth to the twenty-fifth, as the temperature of the season may indicate. Corn should not be planted until the ground has become warm. If planted while cold, and especially while wet, it is liable to decay and to require the labor of planting again; whereas, if planted as late as the first of June, the crop has often been known to mature and yield well. The seasons are, however, seldom so backward as to require the postponement of planting, until that late date. The last year I planted my corn on the twenty-sixth of May, and cut it fully ripe on the twenty-fifth of August. That process of cultivation for any crop which will give the largest return for the amount of labor bestowed, and leave the ground in the cleanest and best state for the subsequent crop, is the one which the agriculturist should adopt. More labor is expended worse than uselessly, because injuriously, in the culture of corn, than upon any other crop. The mode of cultivation practised by us, and, as we believe, originating with us, is as follows: After plowing the ground, for which I prefer greensward, and harrowing lengthwise with the furrows, I then mark out rows, three and one-half feet apart each way, with a sled made of oak plank, which is as good an implement as any for the purpose; then plant from four to six grains at the intersection of each row, which will leave the hills so that a horse can travel through between them each way with a cultivator. As soon as the rows of young corn can plainly be seen, I go through the corn with the cultivator one way, and then in a few days go through the opposite way; this will loosen the soil, destroy the weeds, grass, &c., and no further tillage will be necessary. Hoeing will neither add to the quantity, nor facilitate the growth of the crop. Having tried it, in a field tilled in the same manner with the same soil, and in all respects under the same treatment, that which was not hoed or tilled, produced the best corn. The philosophy of the result is believed to be this: In the tillage with the cultivator alone, the surface of the ground is stirred, and the weeds are destroyed without injuring the roots of the corn, or causing a new set of lateral roots to shoot out, which will in all cases occur if the corn is hilled, these roots require nutriment from the plant, (which would otherwise ascend into the blades, ear, &c.,) without producing any beneficial effect, experience having shown that corn stands as well without hilling, as with. The produce of a field of corn, well cultivated in this manner, may safely be set down at from thirty to fifty bushels per acre, and at an expense of, at least, one half less than by the old mode of hoeing. The crop should be cut up after the first appearance of frost, if ripe, and if it should be only partially ripened, it will ripen in the shock from the nutriment already in the stalk; and the stalks thus cured are estimated at one half the value of common hay for keeping stock. The shocks, if well bound, will stand in the field without injury to the grain or stalks, until mid-winter, if it is necessary. It can be drawn and fed to the stock, as occasion may require, which may be done if it is impossible to husk and store the crop in the fall.

Corn is one of the best crops with which we are acquainted to prepare land for oats, barley, or any other spring crop; and wheat, in the case of a wet autumn, often does well after corn. Drawing a large portion of its food from the atmosphere, which inference is deduced from experiments related in a former part of this essay, it does not exhaust the soil as rapidly as most other crops, for we see good crops of corn produced in some parts of the country for many years in succession, and upon the same ground. We would not, however, recommend this practice. One important fact should be borne in mind, by those who wish to save labor, and avoid disappointment in the cultivation of corn. The seed should always be selected in the autumn from the field, and the ripest and fairest ears should be selected with a portion of the husk attached to each ear, they should then be braided together, and if hung up in some dry place, and left until planting time, not one grain in a thousand will fail to germinate. If, however, taken promiscuously from the corn-house or crib, much of it will fail, and often the whole planting must be gone over again, and the careless farmer lays the blame to the season or ground, when the fault is entirely his own. Never soak corn to make it germinate quickly. If the ground should be wet after planting, it will decay. Dry seed is longer coming up, but never decays in the ground, if prepared as above.

Oats.—This crop, so universally used as food for horses, is probably without a rival, where the safety of the animal is taken into consideration, connected with the go-a-head spirit of the age, which has imparted its energy to road traveling as well as everything else, the horse must perform his part in the drama, and thirty miles a day will only do for "hollow pampered jades of Asia," not for the American road horse—from a good specimen of which we may expect from forty to sixty-five miles per day, without injury.) Experience has proved that no other grain will compare with oats in giving the horse strength, together with that elasticity of muscle which is necessary to prepare him for rapid travelling, and enable him to perform without danger or illness long and rapid stages. This crop must always command a remunerative price, although acknowledged to be a very exhausting crop to the soil. It can be sown in the spring easier than any other crop, and as soon as the ground is dry enough to harrow it, may be sown on plowing of the previous fall at the rate of three bushels to the acre. Being a very strong feeder, it should be sown on rich land. The yield is from thirty bushels to sixty-five bushels per acre, depending of course much upon the season.

Barley.—This crop is grown to a considerable extent in the State, and in all kinds of soils. It does better in deep rich mould, or a warm sandy loam, than in any other, and the amount of the yield depends upon the season, soil, &c. Barley is liable to injury from frosts in the spring, which materially lessen the yield. The first part of May, in ordinary seasons, is a good time for sowing barley. Two bushels per acre is the proper quantity of seed, and from twenty to forty bushels per acre the average yield. It is valuable chiefly for the manufacture of beer, and is second to no crop as a protector for grass seed, which is usually sown with it in the spring. Its broad leaves protect the young grass from the rays of the sun, and insure its growth, when it would fail if sowed with any other grain.

Peas.—This crop, although very useful on account of its being available for fattening swine before corn is sufficiently ripe for that purpose, is yet very uncertain, owing to the frequent occurrence of drought when the plant is small; neither does it sufficiently shade the ground to retain the moisture. Peas should be sown thick; from three to four bushels per acre is a common quantity. Its yield is from ten bushels to thirty-five bushels per acre. They should be sown as early as possible in the Spring, in rich land, plowed in lightly. They make a good preparatory crop for wheat, leaving the ground very clean and mellow.

Root Crops.—The length and severity of our winters seem to admonish the farmers that a good supply of food, which will keep his stock in a state as nearly approaching that produced by good pasture as possible, would be very desirable. To attain this end, we must have resource to roots, such as carrots, rutabagas, &c.

RUTABAGAS.—Having tried the rutabaga, or Swedish turnip, for feeding stock for some years, we are disposed to give it the preference as food, either for young working oxen or young growing stock. The ground should be rich, either naturally or made so by manure. The seed should be sown from the first to the twentieth of June. By sowing about the fifteenth, the danger from the fly is avoided; were it not for which, this crop might be sown as early as the middle of May with advantage. Drill sowing saves labor, and also insures a larger crop; for this purpose, Emery's drill barrow is unexceptionable. The quantity of seed required is about one-quarter of a pound per acre. It should be sown in rows, eighteen inches or two feet apart, which is sufficiently wide to admit the passage of a horse with a cultivator made for this purpose, with three teeth. This may be passed twice through the rows, and no further tillage will be necessary. Rutabagas can be harvested late in the autumn, after the other crops are out of the way, and can be pulled by hand as easily as by any other method. The yield is from one hundred to three hundred bushels; and even five hundred bushels per acre, depending upon the soil and season. For working oxen, I consider them equal to oats; and as an article of food for human consumption, the Maine lumbermen think them next to beans as a strong and healthy nutriment.

CARROTS.—This crop, to which so little attention is paid by farmers generally, is one of great value, more especially as food for horses. The number of bushels which can be grown upon an acre of ground more than doubles that of any other crop in use as food for animals. In comparison with oats, it is worth one-half the price of that grain for horse feed. The grain seed drill (Emery's) is the only one we have seen used, and it works admirably in sowing this kind of seed, which is rather difficult to distribute evenly, unless well rubbed with the hand before sowing, to prevent clogging in the hopper. From three hundred bushels, which is a small yield, to fifteen hundred bushels, have been raised on an acre. Plow as deep as possible, and put on from fifty to one hundred loads of manure, and plow in the second time; weed while the plant is small, and sow in rows two feet apart, so as to work between with a cultivator. Sandy loam is preferable for carrots, as the roots run deep; and deep friable soil is indispensible to the production of a good crop.

Potatoes.—This valuable and almost indispensable portion of our vegetable food, after a period of apparent decay, which threatened its extinction, has the present season yielded an abundant crop, and the first one for years which has shown no symptoms of *the rot.* The cause of this disease, so far as we have been able to ascertain, is entirely unknown, and no remedy yet proposed has been of the least service. By a sort of natural order of things, the *evil day* of the potatoe seems to have passed by, and we may now anticipate a fair return for its cultivation. All soils and situations, and late and early planting, alike, seem to have been visited by this decay, or blight, although sandy loam, and dry, rolling, gravelly land has suffered least. The most easy, and consequently the cheapest and most productive crops we ever raised were, by plowing green-sward in the spring; if well coated with grass, all the better, as that is equal to a coat of manure. Turn the furrows well over, leaving them as level as possible; then harrow lengthwise with the furrows, and plant, covering with sufficient earth only to shelter the growing crop, and leave the hill level and flat as possible. No grass will make its appearance; the few weeds will be best disposed of with the hoe, or cultivator, and often neither are needed. Thus cultivated, the crop will be larger, with fewer small potatoes. By the old plan of raising a hillock over them, the rain and moisture is thrown off, instead of soaking into the hills. Another objection to the old mode is, that the vines set for a new crop, every time they are hoed; and again, hills cause evaporation from the ground, after rain, to go on more rapidly, at least one-third more surface being exposed to sun and wind. From forty bushels to three hundred bushels have been raised, per acre; and from actual experiment, we would recommend the plan of *green-sward level tillage* as the cheapest and most productive. Value, in Milwaukee, in September, 1852, thirty eight cents per bushel.

Domestic Animals.—Standing at the head of the list, and deservedly so, is the ancient ally of man, the horse. Virgil gives us of the Agricultural profession, many hints relative to all the different branches of husbandry, from keeping bees to the rearing of horses; the selection of a sire for the different species of domestic animals, and the selection of seeds. With regard to the latter he says: "unless human industry with the hand should cull out the largest every year, all things will hasten to decay, and gliding away insensibly, be driven backward, like one who rows his boat against the stream, and if by chance he slackens his arms, it is instantly gone, and the tide hurries him headlong down the river." This was the experience of man more than eighteen hundred years since, and is confirmed down to the present time. Without constant care and judicious selection of seed and animals, the farmer must, like Virgil's rower against the tide, be quickly swept away.

In a national point of view, the horse, in its rearing, breaking, and management, is well worthy the attention of the agriculturist. A large portion of the troops engaged in the protection of our widely extended frontier, are mounted men. High prices are paid for horses suitable for the purpose; thousands are used in transporting munitions of war, provisions, &c. The demand is increasing, and will, in all probability, continue to do so for years. To men embarking in any undertaking, the experience of practical men is of some benefit, if only to confirm and strengthen a correctly formed theory; and might be of benefit where a man had no experience, but was willing to take that of others for his guide, when it appeared reasonable. In no occupation does a man require more of that knowledge which comes from the experience of others, than in the breeding of animals; and in this, the observation and experience of others may be made available in the outset.

The first consideration is, what kind of a horse will pay best for his rearing, breaking, &c.? Rail Roads and other improvements in locomotion, steam power, &c., have given mankind at the present age a mania for *fast conveyance*, whether on land or water, and slow horses will no longer answer the expectations of purchasers of horse flesh; they want a good one *to go*. Those who are not particular about speed, never object to a horse if he happens to have it. The fast horse is the horse for the American farmer to raise with profit. All nature presents to us the fact that like begets like, and when this rule is varied, it is an exception. In the breeding of horses, this law is strictly carried out. In almost every instance, celebrated trotting horses have sprung from fast stock on both sides. Trustee, the only horse who ever trotted twenty miles in an hour, was from a trotting mare, Fanny Pullen, and by imported Trustee, a fast race-horse, who was also the sire of that fast mare, Fashion. Black Hawk was sired by Andrew Jackson, who was also the sire of a great number of trotting horses. Black Hawk trotted a mile in 2 m. 40 s.

with a wagon weighing two hundred and fifty pounds, at that time the best heat ever made, considering the weight drawn. Mack, the great competitor with Lady Suffolk, is a Messenger horse, and went in 2 m. 26 s.; the Lady herself is a full-bred Messenger, for ought any one knows to the contrary. The Abdallah stock are from the Messenger blood, and all of them *go*—many being remarkably fast. The fastest Western trotting horse, O'Blenis, is an Abdallah. Although Messenger was imported into the United States as early as 1791, sixty-one years since, his descendants at this day partake largely of his characteristics. Other stocks of horses could be cited to support this position; the Morgan horse, for instance, is a striking exemplification of our theory. That color, speed, longevity, vice, defective vision, and various malformations in horses are inherited, no observing man will deny.

In selecting a brood mare, as much attention should be bestowed, or more, as in selecting a sire. About fifteen and one-half hands has been very near the height of the most celebrated horses of our day. They should have good length of body, with clear bright eyes, small head, long clean neck, oblique shoulder, and withers as high as possible, which position of the shoulder blade allows extensive and safe action.—Such horses never stumble; and if they trip, will recover, while an animal with an upright shoulder would come down entirely. High withers give room for the attachment and length of muscle which an upright shoulder cannot have. The oblique shoulder is indispensable for rapid, safe and easy motion. The legs should be muscular, and as long from the elbow joint to the knee, and as short from the knee to the hoof as possible; this will also give extensive action to the fore parts, which a horse could not have with a length from the knee to the hoof equal to the length from the elbow to the knee. The chest should barrel out back of the girth, and be large and capacious, both to give the animal good health, and cause it to keep easy, as the size of the chest is of great consequence to the health, longevity and usefulness of the horse. This part is too superficially noticed by purchasers in general. The loins should be broad and well covered with muscle, and the haunch—or as it is generally called, hip—should be long, to the place of its termination. The old saying of a "long-bodied horse, with a short back, and long under the belly" being a good one, was not without truth, as a long oblique scapula, with a long hip or haunch would produce just that conformation of body best suited for speed. Great length from the hip to the gambrel, and short from the gambrel to the ground is also one of the best indications of speed. We see an example in the form of the rabbit and greyhonnd. By a close and constant attention to the anatomical conformation of a horse, a person may soon become a better judge of capability in the horse than any one can, who does not take into consideration the important facts that *all animal mechanism* is upon the *same principle*—that the weight to be moved, and the facility with which it is moved, depends upon the length of the lever and its *advantageous position*, and the consequent length of the muscles, which are the pulleys, and by their action, contraction, and extension, propel the animal over the ground. The most careless observer has probably noticed a trotting horse beaten by one of much less muscle, the reason of which is, the want of a good anatomical form in the muscular horse; for muscle is not only necessary for rapid and long continued action, but it is equally necessary that it should act advantageously by a proper arrangement and length of particular parts of the animal. These can be best learned by those who are desirous of information on these subjects, by the attentive study of works on the anatomy and physiology of the horse; William Youatt's is probably the best. All animal mechanism being constructed upon the same principles, intelligent physicians should be, and in general are, excellent judges of the capability of horses, from two causes: their knowledge of anatomy, and their habitual use of the horse in the practice of their profession.

That speed adds to, and often constitutes the sole value of the horse, in the estimation of many, is well known. An instance now occurs to me: Mr. S. B. Davis, of Milwaukee, took to the New York market last May, a number of horses; among which were one pair, which he sold for $1,200, and a single horse which he sold for $600. They could all trot their mile in about three minutes; and to this fact can be entirely attributed all he realized on them, over $200 each. There is always a market for well broken horses of good size and good age, if they can go in three minutes or less. Another instance, too, is in point: Jack Rossiter, the celebrated trotting horse, worked in an omnibus in Milwaukee, and could then have been bought for $200, and probably for less. Falling into the hands of a horseman, he trotted a mile in 2 m. 32 s., and sold for $2,000. Lady Jane, a western mare, was bought in Chicago for $100; she was afterwards sold for $1,600 at a dozen years of age. There are numberless examples of a similar nature. The farmer should not hesitate as to which of the two to expend his surplus food upon; an eight-mile-an-hour drudge, that will cost $80 at four years old, and sell for the same; or a horse bred on scientific principles, worth at four years of age, $200 to $1000, according to the stock he springs from. One farmer in the vicinity of Milwaukee, raised several fast horses, and from their sale, realized a far greater profit than he realized from ten years of wheat farming; yet the number was only five. These facts are worthy of the attention of breeders of horses.

To enter minutely into the details of rearing, breaking, &c., would require more space than we can devote to the subject in an essay like the present, but a few remarks on each head may be of service. In breeding, let the sire and dam possess as many desirable points as possible, and as not one in ten thousand is unexceptionable in every respect, it is desirable that the two should not be deficient in the same particular point. If either has a little failing in one part, let the other be remarkably good in that point, if possible. In this way, the undesirable or exceptionable points may in part be obviated, and if they are not, you will in all probability breed an animal not less valuable than the sire or dam. The fastest trotting horse now living west of the Lakes, was bred from a mare and horse, each of them extremely bad in some points, and each remarkably good in others. The strong and fast points were united in the progeny, although without beauty—the colt* inheriting the vicious disposition of the dam. This happy arrangement of the best points is not at all certain; therefore the judicious breeder will commence with an animal for sire or dam, with as few imperfections as possible, and his success will be certain, in proportion as his parents are perfect. The foal should be kept during the first winter in a warm yard, with a dry, warm stable, and no floor but the ground, and should have room to exercise and walk about in. Carrots, or a little bran, should be given daily, with what hay and water it wants, but without grain of any kind. When fed on grain, the animal becomes much like a vegetable highly manured, larger than he would otherwise be, and not so tough. Grain is too stimulating for the powers of digestion in a young horse, and often settles in the feet. Nature, the best guide in all things, does not furnish the wild horse with threshed and clean oats, but simply grass and water; and although not

* This colt was bred by the writer of this, and was sold a few days after the State Fair for $800, and taken to New York. He could trot a mile in 2 m. 32 s. The dam, on account of her vicious disposition, was sold for $25.

usually as large, grass-fed colts make tougher, more wiry, and enduring horses than those grain-fed, long-legged animals, which have consumed the farmer's provender to his loss.

The business of breaking may commence with the first week of the colt's existence. Halter him and merely hold him the first few times; then begin by leading him a little, always using the utmost kindness and gentleness. Let the whip be left out of the catalogue entirely; kindness will subdue sooner, and more effectually than any other means. If refractory, worry him out with continued good treatment, and if need be, by light feeding, until the temper is quite subdued. Should the animal be exceedingly perverse, not one in a thousand will need anything more than good and uniform treatment. Accustom them gradually to the use of pieces of harness, and finally hitch them to a light vehicle, such as a pair of wheels, with shafts; then gradually accustom them to heavier loads; and finally put them to light work, and always bear in mind that patience will much sooner accomplish the desired object than forcible means.

CATTLE.—The different breeds, or names for cattle, we suppose to be merely the result of a systematic course of breeding persevered in for a considerable length of time, until the progeny were possessed of some peculiarity of color, form, &c., which distinguished them from any promiscuously bred animals. For instance, the Devons are uniformly red. The Durhams are generally mottled with white, and each having some points peculiar to the breed, as horns, form, &c. The Devons are small, or only of middling size; the Durhams are large. When the Romans conquered Britain, they found cattle in considerable numbers; and we have never seen any notice of their having taken cattle there from Italy or any of the Roman provinces. The inference, then, is fair that the Devons, Durhams, Herefords, Ayrshires, &c., are the result of a course of systematic breeding, persevered in for many years, until the progeny are uniform in appearance, in form, color, milking properties, &c.

It is well known that animals of native stock are occasionally found superior to the improved breeds for milking; and for beef, many are equally as good. By judicious selections of such animals, a breed can be propagated, and in a few years, become as marked, and perhaps as valuable, as any of the improved breeds imported at such great cost, and many of them inferior to the common native cows for milk, as the writer has ascertained to his loss. High-sounding names and long pedigrees do not fill the milk-pail; therefore, let the farmer of limited means use his judgment, and select those animals having the requisites for butter or beef, and breed from them a stock at less cost, and with less danger of disappointment. There was a time when the Merino sheep sold at $1,000 per head; Morus Multicaulis, Rohan potatoes, Berkshire hogs, and many other far-fetched and dear-bought commodities, have had their day, when we had as good, and better at home, if we had only had the discrimination to hold fast to that which was good. Therefore, let the farmer constantly select the best for propogation of animals, seeds, or whatever he would raise. By persevering in this course, he cannot fail to realize his most sanguine expectations, enrich himself, and confer lasting benefits on posterity.

RELATION OF CROPS TO SOILS.

BY S. P. LATHROP, M.D.,
PROFESSOR OF CHEMISTRY AND NATURAL HISTORY, BELOIT COLLEGE.

"For many years chemists and philosophers have been investigating the affinities and other peculiarities of molecules or ultimate, indivisible particles of matter. These scientific researches have revealed many important truths, and natural laws, which have a direct bearing on all the economical purposes of agriculture. Some pains should be taken to impart a knowledge of these laws to all practical farmers. When we consider how little opportunity the mass of agriculturists have to study the chemical composition of their soils and crops, it can readily be seen that information of this kind is greatly needed in all operations which aim to feed cultivated plants with their appropriate aliment."—*Dr. Lee, M. D. in "Introduction to Patent Office Report—Agricultural,* 1850.

Repeated chemical analysis of vegetables has shown that they are composed of two classes of ingredients, which are called organic and inorganic. When any vegetable is burned in the open air, the whole of the so-called organic portion is driven off, or escapes in vapor. This consists of oxygen, hydrogen, carbon and nitrogen, in a greater or less proportion of each. There also remains a certain portion of the original plant, in the form of ashes, called the inorganic, or fixed part of the plant. This portion will not be lessened by the continuance of heat.—This is composed of various mineral matters in different proportions.

In general, the organic or combustible part of plants forms a large portion of the whole plant, varying in different instances from 88 to 99 per cent. of their weight when dried. From this circumstance it appeared to the earlier vegetable physiologists that the inorganic part was merely *accidental* in its presence—that it was taken up into the plant, only because it was found dissolved in the fluid by which the plant had been nourished, and that it took no necessary part in its organization. It was found, however, that this inorganic part of the same plant was always of the same kind of material, whatever was the character of soil upon which it grew. This, evidently, would not have been the fact were its presence wholly accidental, and not governed by some fixed laws. It was also found that the composition of the ashes of different plants, grown upon the same soil, varied much in the number and character of their elements. It was further found that each kind of plant, in selecting for itself nearly a constant weight of inorganic matter, while it might choose the same kind or kinds of earthy matters, that some other plants do, to make up their composition, yet it was always in quantities peculiar to itself. Thus, for example, wheat would contain eight pounds of lime in every one hundred pounds of its ashes, while barley, in the same weight of its ashes, would have only about four and one-half pounds.

Different parts of the same plant have since been found, also, to have different proportions of the same element—the ashes of the leaves differing in quantity and quality from those of the wood or body of the plant, and both being different from the root or bulb.

From the above facts it was inferred that the ingredients found in the ashes of plants were essential constituents. This view was corroborated by the observed fact, that plants will not thrive and come to maturity—properly perfecting their seed, straw, &c.—in a soil destitute of the kinds of matter usually found to be present in their ashes.

These facts are the basis of a most important principle to the agriculturist, and one that should be duly recognized, and fully understood by every cultivator of the soil. Says Prof. Johnston, "It is difficult to conceive the extent to which the admission of the essential nature and constant quantity of the inorganic matter contained in plants, must necessarily modify our notions, and regulate our practice in every branch of agriculture. It establishes a clear relation between the kind and quality of the crop, and the nature and chemical composition of the soil in which it grows. It demonstrates what soils ought to contain, and, therefore, how they are to be improved. It explains the effect of some manures in permanently fertilizing, and of some crops in permanently impoverishing the soil. It illustrates the action of mineral substances upon the plant, and shows how it may be, and really is, in a certain measure, fed by the dead earth. Over nearly all the operations of agriculture, it throws a new and unexpected light."

It will be our aim in this article to point out the relation of the several crops, usually cultivated in our State, to the soil, by exhibiting their chemical composition, which has been determined by repeated analysis of their ashes, thus showing the materials which they severally remove from the land upon which they are grown, and the condition in which they leave it, when they are removed, and, as a kind of "improvement" of the subject, to offer such practical suggestions as may be deemed of interest and profit to the agriculturist.

The true, or all the relations of crops to soils, require that we should take into consideration also the organic elements of crops and of soils; but, as the soils of the several districts of Wisconsin, except, perhaps, the so called sandstone district, along the Wisconsin River, and portions of the districts north of that, have a large portion of organic matter in them—say an average of 10 per cent—(See Dr. Owen's Report to the General Government, as quoted by Mr. Lapham, in the first volume of the Transactions of the Wisconsin State Agricultural Society, p. 127; also, Prof. Jas. V. Z. Blaney's Analysis of Prairie Soil, in Patent Office Report, Agricultural, for 1849–50, p. 489,) it is thought best, at present, to confine ourselves wholly to the inorganic portion of plants and soils.

The following Table, compiled from various sources, exhibits the amount of essential elements in a productive soil. Some crops, it is true, may grow upon a soil destitute of some of these ingredients, or rather of some portion of them; but the Table is designed to furnish the elements for the generality of crops:

TABLE I.

IN EVERY HUNDRED POUNDS.	
Organic Matter	10.00
Silica, Quartz	64.80
Lime	5.90
Magnesia	.80
Potash	3.00
Soda	4.00
Chlorine	.20
Sul. Acid	.25
Phos. Acid	3.05
Alumina	5.70
Ox. Iron	2.00
Ox. Manganese	.30
	100.00

It may be of much importance to the farmer to possess some knowledge of these elements and their office, both as constituents of the soil, and of the plants growing upon it. They may be divided into two classes, according to their office in the vegetable economy; those which go to make up the frame work of the several tissues; among which are silex, lime and magnesia; and those which go to fill up the interstices of these tissues, among which are the inorganic matters, phosphates, &c.

We shall endeavor to give a simple statement of the characters of the inorganic elements of plants, as they are found in the soil, and of their office, both as constituents of the plant and of the soil. These will be spoken of in the order in which they occur in the Table.

In doing this, it is taken for granted that they, for whose benefit this article is written, do not now know these materials, their characteristics, their nature, or their use, either in the plant or the soil.

Silex.—Under this term are included those of silica and silicic acid. This substance is well known to all farmers by the names of flint, quartz and sand. We see a nearly pure form of it in the clear, transparent quartz crystals, in the agates so common in our gravel, brought from the region of Lake Superior. The fine grains in ordinary sandstone are particles of silex. It exists abundantly in almost all soils. It is without color, taste or smell, and cannot be melted alone by the strongest heat. As it occurs in the state of flint, of quartz or sand, it is perfectly insoluble in water, and scarcely soluble in the strongest acids. It combines with potash, soda, lime and magnesia, and in this manner it forms a large portion of what are called crystaline rocks, (granite, basalt, &c.) By the action of the air, and other agents, these silicates, as these rocks are called chemically, undergo decomposition and the silica is separated from them in a soluble form. Thus it is found in a considerable quantity in the waters of many mineral springs; and in nearly all the waters that rise from any considerable depth beneath the surface, or have made their way through any considerable depth of soil. If this soluble form of silica has been very thoroughly dried, and especially when it has been much heated or ignited, it becomes again insoluble. It is only in its soluble state that it can, to any extent, be taken up into plants. It is, therefore, found in plants, for the most part, in the above combinations. When plants, which contain this soluble form of silica, are exposed to any decomposing agent, or of any liquid capable of dissolving it in compost, or manure heaps, they give up their silex in a soluble form, capable of again being taken up in the nourishment of other plants.

As this substance may, and does exist in two conditions in the soil—soluble and insoluble—it performs a double office, in both parts of which it is of vast importance. As an insoluble portion of the soil, it acts mechanically, in giving porosity to it, so that both the fruitful showers and the invigorating atmospheres, loaded with the peculiar food of vegetables, may permeate its substance. If soils contain too little of it, they are compact, close and impervious; if too much of it, water runs through them too rapidly, thus leaching them and carrying off their fertile ingredients to lower depths. Soil is not thought to be overdosed with silex when it amounts to 65 or 70 per cent. Above that proportion, it becomes too loose, and not sufficiently retentive of fertile matters, and is capable of producing crops only by annual and heavy additions of manure.

As a soluble portion of the soil it becomes an important ingredient in the composition of plants, and here, as in the soil where it is insoluble, it acts mechanically in giving strength to the stems of all our cereals—wheat, rye, oats, corn, &c., and to all the grasses. Thus it is that in the straw of all these plants, a very large portion is silex, nearly 70 per cent. while in the seeds or grain of these plants it is only from two to three per cent. Where it is wanting in the soils the stems of crops growing upon them are weak and unable to support themselves, like the soft limbs of a young child, or the new bones of any animal. We see that silex, in this state, is the sustaining and protecting agent in the tissues of vegetables, and, in the other, furnishing them with a suitable footing and medium through which nutritious matters are brought to their roots.

Lime.—Pure caustic lime, or quick lime, never exists for any length of time in nature, as its affinity* for carbonic acid will cause it to take it from the atmosphere, and thus form the common limestone, or carbonate of lime. As a carbonate of lime, it acts only mechanically in the soil, the same as silex, rendering it generally more porous. In this state of combination it is insoluble in pure water, the same as is silex. Nature, in this case also, however, has made abundant provision for its solution. Water charged with carbonic acid dissolves it quite rapidly, and rain water, having a great affinity for carbonic acid, as it is passing through the atmosphere, becomes charged with it and is thus prepared to dissolve

* By *affinity* is meant the tendency of bodies to unite and remain united.

the carbonate of lime-rocks upon which it falls, and transport the dissolved material to, and diffuse it through the soil.

Prof. EMMONS, in his Agricultural Report of the State of New York, says, "Few subjects have enlisted the attention of agriculturists so much as the use and effect of lime in and upon soils. The facts very generally go to prove its great value; its action, however, has not been so generally understood. * * * * Analysis proves the constant presence of lime in vegetables. There is no doubt but that it should be present in all soils, to supply the wants of vegetation. But its use and functions do not terminate in supplying a material for nutriment: there are certain reactions [decomposition and composition] of lime upon other elements in the soil, which equal in utility the one just referred to. This reaction is upon the silicates of Potash [potash in combination with silex] and other alkalies."* Lime, when in contact with the above substances in the soil, has a tendency to decompose them, and set at liberty the silica and render it soluble. A mechanical effect attends this chemical action in the soil. It is made lighter, and the whole mass is more porous and friable. Lime is thought by some to favor the decomposition of organic matters in the soil, and thus furnish the materials, of which they are composed, to growing plants in greater abundance than would have been done without the presence of lime. Of the compounds of lime, such as sulphates, phosphates, &c., we shall speak in another place. It will be seen, then, that the offices of lime, as an ingredient of a productive soil are, first, to supply an element necessary to plants; secondly, to liberate the alkalies in combination with silica; thirdly, to render the freed silica soluble that it may be capable of being used in plants; fourthly, to give porosity to argillaceous or clayey soils;† and fifthly, to assist in the decomposition of vegetable and animal matters in he soil.

MAGNESIA.—The office of Magnesia, as an element of soils, seems not to be well understood by agriculturists. From the small amount usually found in productive soils, it certainly cannot very effectually act, as lime does, in the same combinations, as a loosener of the soil; but as it is always found in plants, and since they will not flourish without it, it is necessarily inferred that it is an indispensable ingredient in a good soil. Its general form, in the composition of plants, is in combination with phos-

* Potash, soda and ammonia are called *alkalies*; lime and magnesia, *alkaline earths*.

† Emmons.

phoric acid. Whether this combination takes place before its entrance into the plant, or afterward, is not a settled point. It appears, that it is essential in the formation of the grain of our cereals—corn, wheat, rye, &c.—as in them it is found in much greater abundance, than in other parts. "It is an element of food, and not of mechanical support."

When it exists in great abundance in the soil, it is injurious to crops. Although most of the lime rock of Wisconsin is a magnesian limestone, yet the magnesia is so much more insoluble in water, than lime, that but a small amount exists in the soil, in a condition to be taken up by plants.

Potash.—This substance is well known to farmers generally, as the material which is obtained from boiling down the ley of wood-ashes, to dryness, and when it is purified and combined with carbonic acid, forms the common pearl ashes of the shops. It is found in greater or less abundance in plants, and is also a constituent of animal matter. Its office in the plant, is not quite evident. Much is yet to be learned in regard to it. That it is essential, however, is inferred from the fact, that soils destitute of it, are nearly barren. It is of great importance as a constituent of soil, in rendering (as we have before hinted under silex) silica, and other bodies, soluble, so that it can be taken up by plants.

Soda.—Nearly the same may be said of soda as has been said of potash; in fact, the two are much alike in many of their properties, and also in the purposes which they seem to serve in plants and in soil. Some plants require more of soda than of potash, while others require more of potash than of soda. The tubers of potatoes, require both potash and soda. It is thought by some that potash and soda may replace each other, in case of an absence of the other in the soil. It is found, however, whenever this does take place, that it is a forced condition of the plant, and the probability is, that in such cases the plant would in a few years become so deteriorated or "run out," that it would cease to vegetate.

Of the last two substances there are several compounds of great importance to the agriculturist. Many of them are capable of being used as valuable manures. Of these, however, though they may often exist in the soil, and enrich it by their presence, yet we have not room or leisure to speak further.

Chlorine.—This is a greenish-yellow colored gas or air, and has a very pungent, disagreeable smell. Animals cannot breathe it without suffocation; and when mixed with common air, it speedily kills all living vegetables. When it combines with other bodies, it forms substances called chlorides. Common salt is a chloride of sodium. Every 100 lbs. of salt contains upwards of 60 lbs. of chlorine. It rarely exists in nature in a free, or uncombined state; it is not known, therefore, to exercise any direct action upon the general vegetation of the globe. It is thought to be more important to animals than to vegetables. It is not present in any very great amount in vegetables, but when present it is rather in the stalks and leaves than in the seeds. Clover, however, has some considerable chlorine, and wheat less. It is quite probable, however, that there is more chlorine present in growing plants than is found in their ashes; as the burning of them to obtain the ash, would drive off the chlorine.

Sulphuric Acid.—This is the common oil of vitriol of the shops. It is a compound of sulphur and a gas called oxygen. It is rarely met with in nature, in an uncombined state; but is generally found united with potash, soda, magnesia or lime; the latter of which is the common plaster or plaster of Paris, which is so much used as a fertilizer. This substance is called sulphate of lime by the chemists. In every 100 lbs. of plaster of Paris, there are about 33 lbs. of sulphuric acid. Epsom salts is also a composition of sulphuric acid and magnesia. Sulphuric acid, although it is seldom if ever found as such in vegetables, yet it is an important element of soils. Sulphur, one of its elements, is often found in plants, such as peas and beans, and indeed in almost all plants of this kind. It is also found as an essential ingredient in horse radish, cabbages, mustard, &c. Whenever sulphur is absent in the soil, it has to be supplied by the farmer, by some artificial means; as for example, by plaster of Paris, or sulphuric acid itself, very much diluted by water.

Phosphoric Acid.—This substance is not one that is often seen of itself by the farmer. It is a combination of phosphorus and oxygen, just as sulphuric acid, or oil of vitriol, is a combination of sulphur and oxygen. Most persons are familiar with phosphorus as it is seen in the shops of the druggists. When phosphorus is burned in the air, phosphoric acid fumes will be seen to rise. This is seen in the fumes of a match before the sulphur takes fire. This substance, in its various combinations with other bodies, is of great importance in the vegetable economy, and of course is an essential element of soils. In the parts of plants used for the food of man, it is found in the greatest abundance. It seems to be a very important, if not essential element, in order that the seeds of grain may be brought to perfection. These facts indicate its importance as an ingredient in the soil, and as it is generally found in limited quantities, it is the more important that the farmer should take proper means to secure its presence. Some crops, as will be seen hereafter, require much larger quantities of this element than others, in order that they may be perfected.

The principle alkalies with which it is usually found combined in plants, are lime, magnesia, potash, and soda. Many substances upon which plants live are derived from the atmosphere, so that a soil impoverished by their want may be again enriched simply by suffering the land to lie dormant or by fallowing it. The phosphates, however, can never be derived from the atmosphere or from rain water, nor are they furnished by any of the processes of nature. If they become exhausted, direct application must be made of some substance which contains them. Other substances, though they may be important, yet are frequently so abundant, that there is really no difficulty in obtaining them. This is the case with sulphuric acid, abundance of which exists in plaster of Paris. But with the phosphates this is not the case.* It is on this account that the "super-phosphate of lime" is of so great value as a manure upon fields exhausted of their phosphates.

ALUMINA.—This substance, in its pure or uncombined state, is seldom found in the soil, but it constitutes a large proportion of all the slaty and shaly rocks, and is the principal ingredient of clays, and clayey soils, giving them their peculiar tenacity. It is insoluble in pure water. Though it exists abundantly in many soils, it probably contributes but little, in a direct manner, to the nourishment of plants. Its function, as a part of the soil, is to give consistency and compactness to it; thus differing, in its action from silex, which we have said, is to give porosity to the soil.

These two substances form the basis of all soils, and to them they owe their principal and permanent characters. The presence of the other elements produce comparatively but trifling modifications. The body or basis being thus constituted, the remaining elements, along with soluble silica, may be regarded as food, or as matter out of which the frame work of the various tissues are formed. A soil, however, composed

---

*Emmons.

entirely of these bodies termed nutritive, would be unfit to produce good crops. It is not a matter of indifference what constitutes the basis, or substratum of soils. This must be a peculiar medium, having certain peculiar relations to water and other bodies, which, if not secured by and in their physical or mechanical properties, would render the labors of the farmer of no avail. Most of the earths—by which is meant all the above described substances, except the acids and chlorine—possess some absorbent properties. Alumina, however, when pure, or as combined with silica, (its most usual state,) ranks high in this important particular. The rapid absorption of ammonia by clay, renders it (the clay) a receptacle or reservoir of this substance, which is of so much value as nutriment to plants, and which is thus derived from the air, manure, &c., and retained for future use.*

Oxide of Iron.—This element of soils is well known to every farmer, under the name of iron-rust. All soils contain it very much in the same way as the bog-iron ore, which is an impure oxide of iron, and resembles it in some respeets. It has not yet been determined that the oxide of manganese is an essential constituent of any class of plants, though it is found in small quantities in most of them. Its presence, however, is thought to be, by some, wholly accidental. Its necessity as an element of a fertile soil, though required only in small quantities, is inferred from the fact, that its entire absence from a soil, renders it unfit to produce perfect crops. This fact shows us that the importance of an element is not always to be inferred by its abundance, either in the plant or in the soil upon which it has grown. Silex, which usually forms so large a portion of most soils, is no more an essential element than is the oxide of iron or manganese, which usually forms so small a portion of soils. One element is just as essential for the due perfection of the plant in all its parts, as another. The organic elements of the soil are just as important to the secuing of a good crop, as are the inorganic elements of which we have given a description, but no more so. It is not because the organic are not essential, that we have said nothing of them, but because our soils are tolerably well supplied with them, and because the manures which the farmers are generally in the habit of putting upon their soil, usually contain a much larger portion of organic than of inorganic matter. There is, therefore, a greater liability, in almost every

*Emmons.

agricultural community, of the inorganic elements becoming deficient in quantity. Many, and perhaps, the greater portion of farmers, suppose that they have necessarily supplied the soil with more or less of it, and all vegetables possess the power to take it up, as it is easily soluble in water slightly acidulated with any acid. Thus it is generally present in plants, though sometimes in a very small amount. It does not appear so important to the plant itself, as to the animals living upon it; as iron is an essential constituent of the blood of all vertebrated animals certainly, if not of *all* animals; and the only way by which it can generally be taken into their systems in due quantity, is by their food. But in the soil, iron is thought to be an important element, from the fact that it greatly aids or promotes the formation of ammonia, or the retaining of it in the soil, which, we have already said, is of great importance to the growth af vegetation. To explain its action in the formation of ammonia would carry us too deeply into the principles of chemistry for our present purpose. This, however, is its greatest use, in rendering a soil fertile. The salts of iron are sometimes so abundant in the soil, as to be injurious to vegetation. They are, however, easily neutralized by the application of lime. The salt of iron most usually present, being the sulphate of iron, it can be converted from an injurious ingredient to a most useful fertilizer, by the application of lime, thus forming plaster of Paris, the iron being then simply an oxide, to act as described above.

Oxide of Manganese.—The last, as well as the substance of the least importance on our list, is the oxide of manganese. This is not so common a substance as the oxide of iron, neither is it generally familiar to the farmer. It is formed, however, with the proper materials, if they have but spread, in sufficient quantity, common barn-yard manure upon it. This manure may be either what is called long or short manure; more commonly, however, it is the long, and not in the least composted. This consists almost, if not wholly, of organic matter. It is true, that in some districts of country, the organic portion of soils may be the portion most readily exhausted. In such instances, organic matters are the ones to be supplied. In other instances, it is the inorganic portion that is first exhausted and requires to be supplied; generally, however, both of these kinds of elements are lessened rapidly by the removal of crops, and need equally to be restored in some way to the soil that it may retain its proper fertility.

Having thus described the several inorganic elements found to be essential in a fertile soil, and alluded briefly to their office, both in the soil and the plant; and having given a Table of the relative proportions of the elements necessary, we are prepared to examine the different crops of grain, grasses and roots, which are commonly cultivated among us, with respect to the composition of their inorganic elements and their relative proportions in different plants. This will enable us properly to appreciate the existing relation of these crops to the soil; and the amount of the inorganic material, which they severally remove from it, and consequently the necessity there is, in order to preserve the fertility of the soil, of restoring, in proper quantities, these elements, by artificial means.

It is not to be understood by our remarks, in the earlier part of this article, that every kind of plant, under any and all circumstances, will have, in its composition, precisely the same amount of each different material. The ash of the same plant, if ripe and in a healthy and perfect state, is nearly the same in kind and quality, whatever may be the circumstances of soil and climate, where it may have grown. This general truth, however, is consistent with certain differences, which are of great interest in their bearing upon Agriculture, both in theory and in practice.

We have already mentioned the fact that different parts of the same plant differ in the amount of inorganic elements taken into their composition, and also that they differ in the relative proportions of these elements. We may also add that the quantity and relative proportions of the different inorganic substances varies, in the same plant, with the season of the year, or the age of the plant, when the examination is made. This fact is the basis for determining the time of harvesting the several kinds of grain, and the cutting of grass and green crops for fodder. No principle connected with the management of a farm is of more vital importance to the condition of the farmer's stock, and to the value of his grain, than this. It is one, too, with which he should render himself familiar, and upon which he should constantly act. We may, with propriety, speak of feeding plants, as we do of feeding animals, and there is a principle in both of these instances, analogous to each other, with which, if the farmer is acquainted, and acts accordingly, complete success is sure to attend his efforts. The law, which is abundantly established, both in the plant and in the animal, that certain elements or bodies are determined towards specific parts, should be recognized by every agriculturist.

Cattle breeders and fruit growers well understand this principle. The former will, in due time, give you an animal possessing any desirable quality, and with the flesh or fat laid on in any specified part. They will furnish you the small boned and tender muscled animal properly inlaid with fat, so desirable for pork or beef; or they will furnish, at your bidding, the larger and more compact framed animal duly furnished with strong and elastic fibred muscles, well calculated for service. The latter will, almost without limit, change the qualities of his pears, peaches, apples and apricots, giving them the shape, flavor and coloring prescribed. So the agriculturist, upon the same principle, can change the qualities of his crops, giving us wheat with an abundance of straw and paucity of kernel, and these kernels covered with a thick, heavy cuticle, furnishing abundance of bran and little flour, and this flour deficient in gluten, or the pasty part of flour, so desirable in making bread and pastry; or on the other hand, by proper cultivation, he can give us wheat with an abundance of kernel and comparatively small amount of straw, and these kernels covered with a thin, transparent cuticle, furnishing but little bran with an abundance of gluten.

Again, it is found to be true of plants as well as of animals, that there are, as physicians would say, pathological states, induced by agents to which they (either the plant or the animal) are subjected. By a pathological state or condition, is meant, some disordered or unhealthy state. We find in the animal economy that there is oftentimes disease produced by a superabundance of fluid, called dropsy. There are other conditions where disease is produced by the want of certain elements in the blood, or in the system generally; such are chlorosis, rickets, softness and brittleness of the bones. The only remedy in such cases, is to correct the disproportion and restore the due equilibrium by proper remedies. Just so, also, we may have diseased states of plants, either by a superabundance of some of the elements furnished them by the soil, or by the deficiency of other elements not furnished them by the soil, and the only remedy in these cases is like that in the former cases of the animals, a proper equilibrium must be restored.

And now how is this to be done? In the latter case just as in the former. To the animal, the deficient material is administered directly as a medicine or as food; while the superabundant element is abstracted either directly or by the mediation of medication. So in the plant, that which is wanting must be put within the reach of the suffering vegetable, that it may take it up and incorporate it into its own tissues and grow thereby; and the element acting injuriously upon the delicate fibres and tissues of the tender plant, must be removed, or, which is the more practical way for the farmer, must be changed in its character; and thus either rendered harmless, by being made inactive, or, which is better, beneficial, by furnishing a proper pabulum for the growing plant. But it may be said, and very properly, this will require a good deal of knowledge. We must know not only the constitution of a healthy plant, but we must know the constitution of the diseased or unhealthy plant; and we must know whether these materials are, or are not in the soil, and how and by what means they can be supplied if they are wanting. Very true; no employment requires more science than farming. No knowledge of nature or her laws, comes amiss to the farmer any more than to the physician. The farmer should be the last man to despise learning, being the very one who the most needs it.

To enable the farmer to judge of the merits of the principles which we have been advocating, and also to bring more fully and evidently before his eye, and thus present to his mind these truths, we have taken great pains to compile the following Table from the most reliable sources, showing at a glance, the inorganic composition of most of the crops cultivated by our agriculturists, and the relative proportion of each of the ingredients. We have given, at the head of each crop, the basis of our calculation, whether per ton, or per acre, the number of bushels and their weight, so that any one can calculate for his own field.

It is not to be supposed that the Table is wholly without imperfection, yet it is hoped that it is substantially correct and reliable. The constituent elements are given in pounds and decimals of a pound, and in the last column is the total, removed by a ton, or from an acre, as the case may be. The different varieties of the same kind of grain would furnish a difference in the constituents to some little extent, but we have given the analysis of the most common varieties.

It is hoped that the Table will be found of much value for reference by the farmer, in making his estimates of what his soil needs, and how much, for any crop which he designs to produce. It can but be of use to him, if it guards him against exhausting his fields by constant cropping, without replenishing the materials which the crops severally remove. Let him remember that it is seldom that any cultivated field is so rich in all the essential elements of crops, as to be beyond danger of exhaustion.

TABLE II.

Crops.	Silica.	Phosphates.	Lime.	Magnesia.	Potash.	Soda.	Chlorine.	Sul. Acid.	Alumina.	Phos. Acid.	Ox. Iron.	Ox. Manganese.	Basis of Calculation.	Total per Ton or Acre.
	ELEMENTS.													
Wheat, per acre....	92.00	--	8.64	2.31	3.97	4.47	1.05	1.86	3.09	5.70	--	--	25 bushels, 60℔	per acre, 123.09 ℔.
Rye, per acre......	94.00	--	8.75	1.07	6.32	2.81	.80	7.10	.32	2.65	.58	.46	25 bushels, 54℔	per acre, 124.86 ℔.
Barley, per acre....	87.13	--	11.56	4.06	7.41	5.21	1.54	3.00	2.98	6.03	.25	.36	30 bushels, 50℔	per acre, 129.53 ℔.
Oats, per acre......	172.03	--	5.71	1.92	26.91	2.25	.31	2.58	.39	2.00	.50	trace	50 bushels, 34℔	per acre, 240.60 ℔.
Corn, per acre......	173.60	73.00	13.50	5.00	66.10	61.92	28.40	29.69	--	--	trace	--	....	per acre, 466.21 ℔.
Broom Corn, per ton.	11.96	13.13	.15	.04	10.05	.87	.85	--	--	--	--	--	....	per ton, 27.05 ℔.
Buck Wheat, per acre	.61	--	.95	4.99	6.70	.73	.09	.69	--	18.70	--	--	25 b's. Seed only	per acre, 33.46 ℔.
Beans, per acre.....	7.23	--	14.56	6.98	38.64	14.71	1.54	2.28	.79	7.88	.16	.12	25 bushels, 64℔	per acre, 94.89 ℔.
Peas, per acre......	27.34	--	64.28	9.34	13.58	7.39	.47	8.20	1.60	7.50	.50	.16	15 bushels, 66℔	per acre, 140.42 ℔
Flax, per acre......	8.90	14.76	11.60	1.24	17.38	4.28	.06	7.81	--	--	--	-	1½ tons Straw 15 bush's 56℔	per acre, 66.03 ℔.
Potatoes, per acre...	3.06	21.42	6.00	9.66	50.40	18.00	1.26	10.10	--	--	--	--	6 tons Tubers..	per acre, 120.20 ℔.
Parsnips, per acre...	286.72	808 64	*20.16	14.56	785.12	280.08	--	--	--	--	--	--	6 tons Roots....	per acre, 2175.28℔
Timothy, per ton...	26.29	10.15	.12	.30	18.46	.61	1.49	2.48	--	--	--	--	....	per ton, 59.90 ℔.
Red Clover, per ton.	7.22	--	55.60	6.66	39.90	11.58	7.24	8.94	.28	1.14	--	--	....	per ton, 138,56 ℔.
White Clover, per ton	29.46	--	46.96	6.10	62.10	11.58	4.22	7.06	3.80	10.10	1.26	--	....	per ton, 182,64 ℔.
Rye Grass, per ton..	55.44	--	14.68	1.80	17.62	7.88	.12	7.06	.62	.50	--	--	....	per ton, 105.72 ℔.
Lucerne, per ton....	6.60	--	96.62	6.96	26.80	12.30	6.36	8.08	.60	26.14	.60	--	....	per ton, 191.06 ℔.
Saintfoine, per ton..	10.00	--	43.90	5.76	41.14	8.74	3.14	6.82	1.32	18.32	--	--	....	per ton, 139.14 ℔.
Redtop, per ton....	25.14	8.28	*6.00	3.98	2.75	5.77	1.20	4.38	--	--	--	--	....	per ton, 57.67 ℔.
Millet, per ton......	18.57	10.80	trace.	trace.	4.11	2.06	trace.	.04	--	--	--	--	....	per ton, 35.58 ℔.
Speargrass, per ton..	28.98	6.99	trace.	trace.	2.12	7.50	6.33	3.09	--	--	--	--	....	per ton, 55.01 ℔.
Blood Beet, per ton.	2.49	8.58	1.99	.72	2.94	.29	1.00	2.47	--	--	--	--	Ton of Roots..	20.46 ℔.
Blood Beet, per ton.	236.32	351.68	146.72	64.96	682.08	144.48	206.08	--	--	--	--	--	Ton of Tops...	1832.32 ℔.
Cabbage, per ton...	.59	1.19	2.90	3.60	28.50	32.36	.80	11.23	--	12.76	--	--	....	per ton, 93.93 ℔.
Carrots, per ton....	6.25	15.30	.04	trace.	30.24	5.74	1.46	1.36	--	--	--	--	....	per ton, 60.39 ℔.

* Carbonate.

Many deductions may be drawn from the above Table as we have before hinted, and every farmer can make the deductions most suitable to his own case and calculations. There are some, however, of so general a character that it may be well to mention them here. These are of much importance as general principles in guiding the agriculturists.

Liebig first proposed to divide plants into groups or classes, according as one or another alkali or element predominated in their ashes. This view has been followed by some agricultural writers, while it has been rejected by others, from the fact which we have already mentioned, that the seed or fruit, in many cases, differs very much from the stalk, or straw of the plant, and one kind of element might characterize the stem and another the fruit or seed. Prof. Norton, however, in his "Elements of Scientific Agriculture," mentions five classes of ash, three of which take the lead. 1st. The grains, where phosphoric acid predominates. 2d. The roots, where potash and soda abound. 3d. The grasses, where lime becomes quite important. 4th. The various kinds of straw, where silica is from one-half to two-thirds of the whole weight. 5th, includes trees, such as fruit and forest trees, whose ash, in numerous cases, contains more of lime than of any other substance.

These facts may not appear to be corroborated by the above Table, because that in the Table, the analysis takes the plant as a whole, not separating the ash of the seed from that of the stalk. This classification may be of use in many cases when the whole crop is not removed from the field, as is the case with most root crops, the tops being left in the field to decay, and, of course, to return their constituents to the soil. It is also of importance in indicating to the farmer, what is the effect of returning the straw of his crops to the field, while the grain or seed is removed. The general impoverishing effect of continued cropping not being so great, in this case, as when the straw is not returned in the form of long manure, and yet the impoverishment of some important element essential to a specified crop, may be as effectually and surely produced in the one case as in the other.

The Table enables us to understand the effect of cropping upon the soil, both in connection with and without special manures. We cannot better elucidate this point than by giving the illustrations of Prof. Norton, in his "Elements of Agriculture." Suppose, in the first place, that, as is too often the case, wheat or any other grain has been grown upon a new soil, crop after crop, and nothing returned in the shape of manure, the yield may be good for a number of years, but then it begins to grow less and less, and we may add, poorer and poorer in quality. What is the reason of this? It is probable that the combinations of phosphoric acid are nearly exhausted; these were not so abundant as many other substances at the commencement, (see Table I.,) but more of them in proportion, than anything else, has been taken away. Second, suppose that the farmer has sold all his grain, but has been careful to return the straw as manure; he does not see why the land should run down, and in fact it does not so quickly as in the first case; still, after a time, it also begins to show marks of exhaustion. The different classes of the ash of plants given above explains this at once. In the straw, as will be seen, he has returned chiefly silica to the soil, whereas it is chiefly phosphoric acid which he has been selling off in the grain.

The same thing would result in the exclusive cultivation of any other grain, with this difference only: that some other element would be exhausted. Some soils bear this severe treatment longer than others; but sooner or later they must succumb to such management. If turnips or potatoes alone were cultivated, instead of the phosphoric acid becoming exhausted, it would be the potash and soda, and whatever amount of phosphoric acid might be applied, the difficulty would still exist unrelieved.

The effect of cropping, as deduced from the above facts, can be none other than to impoverish the soil. From Table I., it will be seen that silica, iron, alumina, and organic matter, form a large per cent. of the material of the soil, nearly 90 lbs. in 100. There is no fear then of exhausting these materials, as alumina and iron are not usually constituents of plants. The danger of exhaustion is with reference to the materials or elements so abundant in seeds and in roots, which are found in the 5 or 10 lbs. which remain to make up the 100. The quantities of these substances are usually small in the soil to commence with, and, as they are the very ones constantly being carried away, are soonest exhausted.

Whenever one of these important elements is gone, or reduced to a small quantity, the crop will begin to fail and become shriveled in its kernel, to weigh less per bushel and to be of an inferior quality.

It has become a proverb in some parts of England, and has been imported to this country, that 'lime enriches the fathers and impoverishes the sons.' But from the above facts it is easy to explain the proverb. It many times happens in cultivated fields, that the lime becomes first exhausted, or in other instances, the lime and sulphuric acid have both been wholly, or nearly so, removed, while the other elements are in abundance. Suppose in the first of these cases, that the farmer should, perhaps accidentally, make use of lime as a special manure. The result would most certainly show a great increase in the product. This seeming facility of increasing the fertility of his soil induces him to repeat the application of lime, and it may be with benefit even the second or third time; but while he is supplying only lime to his soil, he is removing in his crops, other important elements, some of which soon become exhausted. The farmer, if he does not understand the process, now wonders why his crops fail; he has applied abundance of lime, which before, gave such evident increase in yield. But it is not lime that is now wanted; it may be soda or potash, or, phosphoric or sulphuric acid. Apply them and good crops will again crown his labors. This view explains the beneficial results of potash or any special manure, as in the second case supposed; where sulphuric acid and lime were exhausted. Care should ever be exercised in the use of special manures, that other materials are also supplied.

What is called the *rotation of crops* is based upon the principles involved in the above remarks, for the theory of its action. All good farmers know that the most ruinous system to fields that can be devised is to prolong the cultivation of the same crop upon the same field year after year. Such fields can be restored to their former vigor and fertility only by heavy and frequent manuring. This is too costly a process, however, to be usually adopted. The one practised by every good farmer is the one most in accordance with the principles of chemistry. After raising one kind of crop for one, two or three seasons from the same field, by which one or more elements of the manure applied may be supposed to be nearly or quite exhausted, another crop of a different kind and requiring different elements from those of the first, is then cultivated, for one or more seasons, when a third, differing from the two former in its elements, may be successfully cultivated. This series of crops may all perhaps be raised from one thorough manuring of a field, when, otherwise, it would have required manuring as often as the crop has been changed in the case mentioned. The great art in the rotation consists in selecting crops belonging to the different classes above mentioned, such as grain crops, root crops, and grass crops, each of these requiring a different material and removing it from the soil.

Suppose the farmer to have a soil which requires the application of manure to render it fertile. He adds a good coating of manure and then takes a crop of corn or wheat; this will remove most of the phosphates that were added in the manure; a second or third crop would probably remove the whole and perhaps would require the application of some phosphates to make them profitable. There yet remains, however, from the manure, considerable quantities of potash and soda which the grain crop did not so particularly require; with these in the soil a good root crop, such as potatoes, turnips, or beets, may now be raised upon the field, after which there will doubtless still remain a sufficient quantity of lime for a good grass crop. Thus is it that a knowledge of the inorganic elements of plants opens plainly to our view the philosophy of many of the otherwise secret operations of nature which are constantly passing under the observation of every agriculturist.

In closing this article we can but urge upon the farmer the importance of familiarising himself with the great principles of vegetable physiology, which includes not only the operations carried on in the plant itself, but also the effect of these processes upon the soil on which they grow, and from which they derive their nourishment. Nothing would contribute more to the interest of agricultural pursuits and to the elevation of the business of cultivating the soil to its proper and just rank in the scale of human pursuits. Let it be the motto of every farmer: "Know well thy calling."

ADAPTATION OF CROPS TO SOIL AND CLIMATE.

BY JOHN Y. SMITH, MADISON.

Division of labor in procuring the multiplied objects of human want, is one of the most prominent characteristics of civilized society; and, whether it be the cause or the consequence of a high state of civilization, its importance to that state, is none the less obvious. Its necessity is founded in the capacity of human beings to enjoy, and to become refined and ennobled by the enjoyment of a multiplicity of objects; and the limitation of the capacity of any one individual of the species, to produce any considerable number of those objects, in any tolerable degree of perfection.

No one, it is presumed, will doubt that the art of printing, the introduction of steam navigation, and railroads, and electric telegraphs, are exerting, in every point of view, an elevating influence upon mankind.

Astronomy and geology are leading the human mind to look higher and deeper into the mysteries of creation and to entertain more enlarged conceptions of the Infinite Majesty; and even comliness of attire and elegance of equipage, which are dependent upon the humbler branches of the sciences and arts, when not carried to a passion, and made to minister to pride and vanity, are not without their elevating influences upon character, nor wanting in instances of the Divine approval. Surely, if it be worthy of the Most High, so to clothe the lilies of the field, that Solomon, in all his glory was not arrayed like one of these, it cannot be displeasing to Him, nor inappropriate to human nature, that man should seek to deck himself with beauty and grace; and, when the Divine skill is so elaborately displayed in all His works—in the shining hosts of the firmament, in the diamond, the pearl, the cloud, the rainbow, the dew drop, the landscape, the flower, and in every evanescent bubble that dances to the music of the waterfall or the whistling of the ocean storm—in every animated form, in every eye that sparkles to the light, in every ear that listens, and in every sound that swells the tide of nature's harmony, should human skill be indifferent to those perceptions of the grand, the beautiful, the elegant, the appropriate, with which the Creator has endowed the human soul and ministered to with such a lavish hand, and confine itself to dry utility, in its narrowest sense? Nay rather, since it is the noblest aspiration of the human soul to copy after the Divine Being, in the moral and intellectual, should he not also in the artistical? To be assured of its propriety, we have only to notice the recorded fact, that, in particular instances, the Creator himself has condescended to be man's instructor in the arts, and in others claimed to be the author of artistic talent and skill.

When the Jewish tabernacle was about to be constructed, Israel's God was the architect. The materials selected were of the most costly description, and its furniture was required to be of the most elaborate and cunning workmanship; and two men, and others under them, were selected, and remarkably, if not supernaturally endowed with skill to execute the magnificent design; and it is added, "in the hearts of all that are wise hearted I have put wisdom, that they may make all that I have commanded thee." The attire of the priests was to correspond with the splendor of the tabernacle. Their garments were to be composed of the finest materials—of blue and purple and scarlet and fine linen of curious workmanship, and bedight with gold and precious stones. "And for

Aaron's sons shalt thou make coats, and thou shalt make for them girdles, and bonnets shalt thou make for them, for glory and beauty."

The second King of Israel did not reproach himself that he dwelt in a house of cedar, but rather that the ark of his God abode within curtains; and when the tabernacle was about to be superceded by the more permanent and costly structure of the temple, he admonished Solomon his son that "the house that was to be builded for the Lord must be exceeding magnifical; of fame and glory througnout all nations;" and thousands of artisans were employed for twenty years, and wealth equivalent to many millions of our dollars was expended in completing and furnishing the gorgeous edifice.

We are not to suppose that the splendors of art displayed in the Jewish temple and worship, could add aught to the grandeur of Him who "dwelleth not in temples made with hands;" "Neither is worshipped with men's hands as though he needed anything, seeing he giveth to all life, and breath, and all things;" but rather that they were adapted and intended to produce a salutary impression upon the mind of the beholder, in harmony with the appropriate duties there to be performed. We are not, therefore, at liberty to doubt the moral propriety of cultivating the arts to any imaginable extent which may consist with due attention to other duties.

But how is this to be accomplished without division of labor? The arts and the sciences upon which they depend, have arrived at their present degree of perfection by slow advances; no one of either having been matured by any one mind. The limited period of human life and the limited capacities of the human mind, forbid it. The most gifted mind must spend half a life-time in reaching, by a beaten path, a point which others have reached before him, and to be ready to begin where his predecessors left off; and then, his progress into the dark unknown, must be extremely slow. Hence it is obvious that no one mind, however gifted it may be, can master all the sciences, nor all the arts, nor any considerable number of them. The only possibility of perfection or progress in either, is by means of that division of labor between them respectively, and between them collectively and agriculture, whereby each individual is enabled to devote his exclusive attention to some one, or at most, a few such pursuits as his particular taste and genius best qualify him to prosecute. Even if a more than antediluvian longevity would enable the same individual successively to master every branch of knowledge, both scientific and practical, he would still, as an universal genius, be comparatively useless to his species; for the reason, that, should he live on, with unimpaired energies, for another thousand years, his limited faculties would not admit of his retaining sufficient knowledge of anything, to render him useful, either to himself or others. Like a child with a large apple in each hand, one branch of knowledge must slip from him while he is attempting to grasp another. Neither could any individual who would be likely to use them, ever possess himself of all the implements of agriculture and the arts; and it would be bad economy if he could, since each individual would be obliged to keep on hand the means of producing whatever he consumed, whilst all but a fraction of their cost must remain unproductive on his hands. The foregoing hasty glance at this feature of civilized society, must be sufficient to convince the most thoughtless, that a state of society at all removed from barbarism, cannot exist without a division of labor and an exchange of products, not only between agriculture and the arts, but also between different branches of the arts themselves.

Analogous to the division of labor between intelligent agents, according to their various tastes and talents, is the division of labor between different soils and seasons and climates, according to their various productive powers.

The former is founded in the nature of man; the latter, in the constitution of the globe he inhabits. Amongst the most prominent characteristics of our planet are, variety of soil, variety of season, and variety of climate, and a consequent and corresponding variety of natural products.

Variety of soil is so common, that it is found, not only in the same latitude, but in the same town, and, almost invariably, upon the same farm; and a sorry farmer must he be, who does not know something about the adaptation of crops to different descriptions of soil. Without the aid of chemical analysis, the observant farmer learns from observation and experience, what particular crop, or class of crops, is best adapted to each of his fields, and endeavors, as far as practicable, in the subdivisons of his farm, to classify these varieties so that the soil best adapted to the growth of the coarser grains and roots, shall be by itself; that adapted to the smaller grains, by itself; and those suited to meadow or pasturage, by themselves, respectively. And although the importance of rotation of crops, may sometimes induce him to deviate somewhat from natural adaptation, and though a knowledge of the chemical properties of soils and manures, may enable him greatly to modify the native qualities of different soils, yet he will find, upon almost every farm, some soils upon which he would never inflict some particular crops; and in all his arrangements, he will study to deviate as little as possible from natural adaptation; because he knows that by doing otherwise, he would be counteracting those powers, which nature designed for his aid.

As our observations take a wider range, and whilst the minute diversities just noticed, every where abound, we find particular districts remarkably adapted to the growth of particular products; as Weathersfield, Ct., for onions; Long Island, for melons; the Genesee Valley, for wheat; and a few towns in Central New York, for hops; and all on account of the peculiarity of the soil.

Extending our observations still further, we find varieties of seasons, and varieties of climate, with the same adaptation of products to each, which we find in respect to diversities of soil, except that in the latter the laws of nature are more imperative. A greater mistake could scarcely have been made in regard to the economy of our planet, than that recorded by Milton, when, in portraying the curse inflicted upon man for his trangression, he says:

> "Some say he bid his angels turn askance
> The poles of earth, twice ten degrees and more,
> From the sun's axle; they with labor pushed
> Oblique the centric globe; some say the sun
> Was bid turn reins from the equatorial road
> Like distant breadth to Taurus and the seven
> Atlantic sisters, and the Spartan Twins,
> Up to the tropic Crab; thence down amain
> By Leo, and the Virgin, and the Scales,
> As deep as Capricorn; to bring in change
> Of season to each clime; else had the spring
> Perpetual smiled on earth with verdant flowers,
> Equal in days and nights, except to those
> Beyond the polar circle; to them, day
> Had unbenighted shone, while the low sun,
> To recompense his distance in their sight
> Had rounded still the horizon, and not known
> Nor east nor west, which had forbid the snow
> From cold Estotaland, and south as far
> Beneath Magellan. At that tasted fruit
> The sun, as from Thyestian banquet turn'd
> His course intended; else how had the world
> Inhabited, though sinless, more than now
> Avoided pinching cold and scorching heat?"

Now while this is all very good poetry, it is not only questionable theology, but decidedly bad philosophy. It is, indeed difficult for a finite mind to entertain very clear conceptions of the modes of the Divine existence. Nevertheless, if we gain any tolerable idea of an Infinite Being, we cannot (to speak after the manner of our ordinary conceptions) do less than regard him as existing at all times at once, and therefore as having no occasion to "bid his angels" go and mend his work to adapt it to unexpected contingencies. But this is not the place to discuss a question upon which theological Doctors disagree.

A little reflection will satisfy us, that, were the earth placed in a "centric" position, it would just about spoil it. Were it not for the inclination of the earth's axis to the plane of the ecliptic, it is very questionable whether "spring with verdant flowers" had ever smiled on earth at all—certainly not beyond thirty-five or forty degrees from the equator; and if it had, man, in his best estate would have found it difficult to subsist upon mere flowers. To determine the climate of a given latitude, under the original arrangement supposed, we have only to ascertain the mean temperature between that of the 20th of March and the 20th of September in the same latitude, under the present arrangement; which in this latitude would give us a climate perpetually subject to frost. In fact, under such an arrangement, utter desolation must have reigned over at least two-thirds of the present habitable globe.

The poet goes on to suppose that

> "These changes in the heavens, though slow, produced
> Like change on sea and land; sidereal blast,
> Vapor and mist, and exhalation hot,
> Corrupt and pestilent,"

and brought into play the winds which sweep over sea and land, to the great annoyance of mankind. This supposition is much more philosophical than the other, and may for the most part be true. It is quite possible that, were it not for the inclination of the earth's axis and the change of season thus brought in, universal stagnation would pervade both air and water; but would that be an improvement on the present state of things? Would the "exhalations hot," of the tropics, be less corrupt and pestiferous than now? Indeed, were not those exhalations hurled about and dispersed by those very means which the great poet so much deprecates, would the tropics be habitable for any nature more refined than that of a crocodile? In fact, sound philosophy compels us to believe, that, were it not for those atmospheric commotions, the vapors would fall back upon the bosom of the stagnant deep, while on the continents there would be no rain, no dew, no fountains, no streams, and no life, either animal or vegetable, any where on the globe.

On the contrary, it would seem as though the inclination of the earth's axis, twice ten degrees and more, was the result of a series of abstract mathematical calculations, to which the mind of a Newton would have been wholly incompetent; and with a view to the earth's utmost capacity to sustain the sentient tribes that were to inhabit it. Should the mathematician and the philosopher, with all the data the present system furnishes, put their wits together, to see if the inclination could be made one single degeee more or less, without diminishing the earth's capacity to sustain animal and vegetable life, they would probably arrive at the conclusion that it could not. If more, it would be deleterious to the products of the tropics, without conferring an equivalent benefit upon those of the temperate latitudes; if less, the injury would be reversed, and very probably the products of both would suffer by either change.

Change of season and variety of climate are as essential to variety and perfection in the products of nature, as are diversities of tastes and talents and pursuits amongst men, to variety and perfection in the products of art. There is probably not a single vegetable product which will flourish equally well in every climate, and most of them are confined to a range of a few degrees of latitude.

Wheat will not germinate in a higher temperature than 95 degrees. the most favorable being 65 degrees. Hence, wheat does not grow in the torrid zone, where the temperature of the soil is very commonly 120 degrees. Barley germinates at a still lower temperature than wheat, whilst maize will germinate at 113 degrees. Hence, maize will flourish in a warmer climate than wheat, and wheat in a warmer climate than barley; and similar differences exist in regard to a great variety of other products. Dates, coffee, cocoa, bread-fruit, bananas, cinnamon, cloves, nutmegs, pepper, myrrh, indigo, ebony, log-wood, teak, sandal-wood, and many other vegetable products which are valued for their flavor, odor, color, or density, are found only in the tropics. In the warmer portions of the temperate zones, we find the apricot, citron, orange, lemon, peach, fig, vine and olive. Farther north, the apple, plum and cherry appear, while still farther north, fruit trees disappear entirely.*

* See Carpenter's General and Comparative Physiology.

These are but specimens of the products which flourish only in their appropriate latitudes; some requiring perpetual summer, which they could not enjoy were the earth's inclination very much greater; and others requiring the precise alternations of season which they could not have, were the inclination very much less. The winter grains require the frosts of winter, as well as the peculiar temperature of a northern summer, to perfect their qualities. The northern potatoe, to which millions of our race owe their very existence, and many other varieties of roots, will scarcely grow at all in soil which never freezes, or which rises to any thing approaching a tropical temperature; while the sweet potatoe steps in where the other steps out, an inferior quality of each lapping a little upon the domain of the other; but neither will succeed at all where the other grows in perfection. And, bulky as these products are, in proportion to their value, they are becoming articles of extensive interchange between neighboring States, while the inhabitants of each, fancy (nor is it a mere fancy) that they have added a new luxury to their tables, by the exchange.

In addition to latitudinal varieties of climate and season, we have longitudinal subdivisions and modifications of the same, varying with the extent of country, its relative position to the ocean and its elevation above its level, and bringing in a greater variety of products than could consist with mere latitudinal divisions. For example, in the same latitude, the climate and seasons are quite different in Europe and America. Hence, there are many products of American soil, which, for want of sufficient heat in summer, will not mature at all in the same latitude in Europe; and many products of the same latitude in Europe, on account of the severity of our winters, are impracticable upon American soil.

I would not, however, be understood as maintaining that, in any particular country, those plants alone should be cultivated, which are indigenous to that country. Many varieties, both of plants and animals, may be transposed without injury, and an occasional change of locality will often improve grains, provided too great a deviation from their native latitude be not allowed. The potatoe, is a native of America, yet its migration across the ocean, is supposed to have doubled the population of Great Britain and some other portions of Europe; and the introduction of European grains and grasses and domestic animals, upon American soil, has wrought still greater changes in the New World. But this does not militate against the special adaptation of a great variety of products to every division, subdivision and modification of climate and season.

The inferior animals, being provided with the means of generating heat within themselves, have a somewhat wider range than plants, which are entirely dependant upon external heat; and the range of the respective species of animals, is nearly in proportion to the perfection of their respiratory apparatus. But each has bounds to his habitation which he will not willingly pass, and beyond which he cannot be forced without deterioration or destruction; whilst man alone, the most perfectly organized of any, and the Divinely constituted lord of all, is endowed with a physical nature, which, in the species, if not in the individual, can adapt itself to every clime; and his superior capacity over the lower animals, to enjoy the fruits of the earth, is in proportion to his superiority in other respects. With the nature which God has given him, man can no more divest himself of the desire to enjoy whatever, of every clime, is pleasant to the eye and good for food, than he can rid himself of any other attribute of his being. Here we find the same beautiful adaptation which every where prevails in the physical world—a nature craving almost endless variety, and almost endless variety to satisfy that craving. We cannot, therefore, conclude, without doing violence to the harmony of nature, that variety in the products of the earth are merely incidental to change of season and diversity of climate; but must rather conclude that those changes and diversities are only the means adopted by the munificent Father of all, for multiplying his bounties and "filling our hearts with food and gladness."

But whilst the desire for universal enjoyment is felt and acknowledged by all, the question as to how it is to be satisfied to the greatest practicable extent, and with the best effect, has long been disputed. The earth, except to a very limited extent, will not yield her products, otherwise than as the reward of industry, and no one man can extend his labor over sufficient space to procure directly, all the objects of desire. He cannot, at the same time, cultivate a field of wheat in Wisconsin, a field of cotton in Louisiana, a field of rice in South Carolina, a field of sugar cane in Cuba, a field of coffee in Java, and a vineyard in Italy: yet all these products, and a thousand others equally beyond his immediate reach, are objects of his desire, and when possessed, contribute to his enjoyment. But how is he to possess himself of them? The natural and obvious answer to this question, would seem to be—by uniting to the division of labor which nature has instituted between different climes, a corresponding division of labor between the industrious agents who inhabit them, and a mutual exchange of products, through the channels of commerce.

Under the mistaken impression, that commercial industry was so much labor lost to the world, and especially to the community engaged in it, various expedients have been resorted to, both in ancient and modern times, to circumscribe its limits, or to dispense with it entirely. Many of the ancient nations repudiated commerce altogether, and confined their enjoyments to the products of their own climes respectively; and some modern nations still adhere to the same narrow policy. But this policy is fast giving way to a more enlightened public sentiment, and clearer conceptions of the true interests of mankind, and their right, upon fair and honorable terms, to share in all the sources of enjoyment which the wide realm of nature affords. Indeed, it is becoming a serious question amongst the most enlightened statesmen, whether any nation has the right to exclude the rest of mankind from all participation in the products peculiar to their own clime, and which the bountiful Father of nature so manifesly intended should be shared by the whole family of man; and whether a dogged refusal to allow an equitable interchange of products with other nations, will not justify a resort to compulsory measures.

Another expedient to avoid what has been regarded as the wasteful expense of commerce, is, to force products out of their native climate. Whilst the Creator has divided the surface of our globe into different and distant climes, and brought in change of season and modifications to each, by means of those wonderful and complicated arrangements, already noticed, and assigned to each its appropriate task in the work of production, man has divided it into separate political communities, and fancied he could compel the powers of nature to conform their products to arbitrary lines and treaty stipulations, and yield him whatsoever his soul desired, from the same soil and climate! And the effect has been to defraud himself of half the bounties which nature was ready to pour into his lap, if he would but consent to receive them upon her own terms. But instead of acceding to those terms, he has been wont to insist that the temperate latitudes shall yield him, upon some terms or other, the products of the tropics; or an extremely variable climate, the products of a more uniform one; or, a colder clime the products of a warmer, and *vice versa*. But all such experiments have resulted in loss to those who, either from the interference of public authority, or from their own misguided choice, have tried them, since the same labor otherwise bestowed would, through the medium of commerce, have procured a greater quantity and better quality of the desired product.

Mr. Say speaks of the loss sustained by the French people, when, at one period, their government compelled them to cultivate sugar beet and woad instead of grain, under the impression so common at the time, and which still lingers in the minds of many, that it is better to produce at home, an inferior article and at greater expense, than to procure a better and cheaper product from abroad. In regard to the experiment, after citing the estimate of HUMBOLDT, that "seven leagues of land in a tropical climate, could produce as much sugar as the utmost consumption of France, in its best days, ever required." Mr. Say remarks: "Suppose that wine had been grown, instead of the sugar of beet-root, or the blue dye of woad, the domestic and agricultural industry of the nation would have been quite as much encouraged. And, since the product would have been more congenial to the climate, the wine produced from the same land would have produced a larger quantity of colonial sugar and indigo through the channel of commerce, even if conducted by neutrals or enemies. The colonial sugar and indigo would have been equally the product of our own land, though first assuming the shape of wine; only the same space of land would have produced them in superior quantity and quality. And, the encouragement to domestic industry would be the same, or rather would be greater, since a product of superior value would reward more amply the agency of the land, capital and industry engaged in the production."

I have selected these instances of the perversion of the powers of nature, from many which might be adduced, because agriculturists of our own country are constantly being urged to try the same or similar experiments, which, with a slight knowledge of political economy, they would never meddle with. At one time they are made to believe they can become independent of their southern neighbors and make their fortunes by cultivating the sugar of beet. At another, they are urged to destroy their corn crops by cutting them in the milk and extracting sugar from the stalks. Again they are taught that they can compete with their neighbors of the tropics in the production of coloring matter, and woad and madder are all the rage. And then again they are lectured on the bad economy of depending, to so great an extent, upon other regions for their fruits, and spices, and drugs, and set to forcing exotics or experimenting on substitutes, vainly fancying they can, by hook or by crook, reverse the laws of nature; or rather, betraying their ignorance that nature has any laws at all. But after wasting time and money to their heart's content, upon such experiments, they find themselves in possession of less than a moiety of those products which they might have procured with the same outlay through the medium of commerce, had they devoted their lands to the purposes for which nature intended them; and not only so, but they find the stinted product very inferior in quality. Their sugar is black and bitter; their coloring matter is dull; their exotic fruits, if not killed by the frost, are dwarfish and insipid; their coffee has the flavor of parched beans; and their drugs have scarcely enough of the medicinal properties to answer the purposes of a Homœpathist.

Says the writer above quoted* (and whose reasoning is no less worthy the attention of the farmer than of the statesman.) "It is always a bad speculation to attempt raising the products of the torrid, under the sun of the temperate latitudes. The saccharine and coloring juices, raised on European soils, with all the forcing in the world, are very inferior in quality and quantity to those which grow in profusion in other climates. * * * * * In condemning our lands to the growth of products ill-suited to them, instead of those they are better calculated for, and consequently, buying very dear what we might have cheap enough, if we would consent to receive them from places where they are produced with advantage, we are ourselves the victims of our own absurdity. It is the very acme of skill, to turn the powers of nature to the best advantage, and the height of madness to contend against them; which is, in fact, wasting part of our strength in destroying those powers she designed for our aid."

In some portions of the torrid zone, the sugar cane attains to a gigantic growth, filled to its tip with saccharine juice, and so rich, that it will sometimes partially granulate as soon as exposed to the air; whilst those same regions are ill-suited to the growth of northern products. There is no natural reason why a farmer in Wisconsin might not exchange, directly or indirectly, a barrel of flour for a barrel of sugar, or nearly in that ratio, and effect other exchanges at similar rates. There are, however, some of the fruits of the warmer latitudes, such as fresh grapes,

---

*Say's Political Economy, Book I., Chap. 7, Sec. 1.

for example, which will not bear transportation to any considerable distance, and to procure, even an inferior quality of which, may justify the extra effort necessary to force them out of their native latitude; and here the economy of the experiment ends.

I may be mistaken, but I will hazard the opinion that the experiments in flax cotton, will prove scarcely more successful than those already alluded to. If I understand the subject, the objection to flax, as ordinarily prepared, is, the difficulty of manufacturing it by machinery, and that that difficulty is owing to the firmness and strength of the fibre; and, that the object in cottonizing it is, to rid it of those qualities—the every qualities which constitute its chief excellence as a natural product. I confess I am slow to believe that, when nature has taken the pains to bestow upon a particular product, excellent qualities peculiar to itself, we can possibly gain any thing by destroying those qualities. It is true that natural adaptation to the powers of machinery, is a desirable quality in the raw material; but when nature has furnished two similar products the one possessing this very adaptation and the other destitute of it, but superior to it in other respects, it may well be questioned whether she ever intended the two should be confounded. When we consider in what lavish profusion appropriate climes produce real cotton, it may be difficult to imagine what advantage can be anticipated from taking a naturally superior product and reducing it to the quality of cotton, except it be to show that "some things can be done as well as others."

As a general rule, nature does not bestow upon any product superior qualities, as compared with others of a similar nature, without a corresponding draw-back as to quantity. A bushel of wheat contains more farinaceous matter than a bushel of potatoes, and it requires more land and labor to produce it; the heaviest fleece is never the finest wool; and so on in a multitude of examples that might be named. The first question then, in regard to the economy of flax-cotton, is, whether the same amount of land, capital and industry devoted to the culture of northern flax and manufacturing it into cotton, will produce as great a quantity of fibrous matter as it would if devoted to the culture of natural cotton? If not, the next question is, whether the flax, when reduced nominally to the quality of cotton, still retains enough of its superior qualities to balance the deficiency in quality? If not, then it is clearly a bad speculation and must inevitably prove a failure. The first qnestion seems to receive a negative answer, not only from the general fact that vegetable fibre grows much more luxuriantly in warm climates than in colder ones, but also from the analogy of nature in her apportionment of valuable qualities to quantity. In regard to the second question, it may be that a fabric of superior elegance may be produced from it, as compared with cotton; and the properties of the two products, as conductors of heat, and their compartive comfort as materials for clothing, may remain unchanged; but the very object to be obtained by the process of cottonizing the flax, seems to preclude the idea of superiority in respect to strength and durability. The subject may be worthy of scientific investigation and cautious experiment; but conclusions should not be jumped at by taking things for granted which are by no means self-evident. The idea of producing flax cotton as a measure of independence, or a means of undermining slavery, regardless of considerations drawn from nature, would be as absurd as that of a certain old lady who suggested to her lord the propriety of buying a cotton ram and raising their own cotton that way.

Another phase of bad economy in the adaptation of products to soil and climate, (or rather, to the latter) is, in not confining each product within proper limits in respect to contiguous territory; in other words, in not knowing where to drop the cultivation of one product and introduce another. As already shown, every product has its appropriate range of latitude, and many of them of longitude also, beyond which they cannot be freed without sensible deterioration; and we cannot doubt that such is the economy of nature, that, by confining each product to the precise range wherein it is produced to the greatest advantage, the world would best be supplied with an abundance of each. But the effect not only of political divisions and the interference of authority, but of State pride and false emulation, and even of neighborhood example, is, to crowd products beyond those natural limits. This is particularly the case in respect to the three great staples, sugar, cotton and tobacco. There is no portion of the United States as well adapted to the growth of sugar, as many localities within the tropics, and no portion of the tropics as well adapted to the growth of cotton, as the southern portions of the United States. Yet the cultivation of sugar is forced into the United States by the imposition of taxes upon that imported from the tropics, equal to the difference in the productive powers of nature, in respect to the product, between the two localities; while, but for the shackles imposed upon commerce, the sugar plantations of the United

States, if devoted to the growth of cotton to be sent to New England, or even to old England for manufacture, and then sent to the tropics, would produce nearly twice the quantity of sugar they now do; and the sugar would be equally the product of our own country though first assuming the form of cotton; and thus we "compel ourselves to buy very dear what we might have cheap enough," and "become the victims of our own absurdity."

Nor does the evil end here. As in the pages of a printed sheet, if one page be out of register, all the pages must be out likewise, so, without regard to political lines, when one important product is pushed beyond its proper locality, it necessarily trenches upon the appropriate locality of another, which is itself forced to seek a less congenial clime, where it trenches upon the appropriate domain of some other staple, and so on, until, by a single stroke of mistaken policy, every important product of a whole continent is forced, more or less, out of its appropriate climate, and its inhabitants are justly rewarded with the stinted or sickly fruits of the rape committed upon nature.

I will only add, that, whatever the political theorist may teach him, the wise farmer will rather study those powers of nature with which he is a copartner, and as he finds himself in the proper locality, will "cast abroad the fitches and scatter the cummin, and cast in the principal wheat and the appointed barley and the rye in their place (not out of it) for his God doth instruct him to discretion, and doth teach him."

AGRICULTURAL FENCES AND ENCLOSURES.

BY JOSIAH F. WILLARD, JANESVILLE.

Originally the idea of erecting barriers in the form of fences for the purpose of restraining domestic animals, was unknown. It never occurred to the "Patriarchs" that long lines of fences would be a profitable substitute for the labors and watchings of the shepherd and herdsman; the idea never suggested itself to them, that turning their cattle and sheep loose to wander at their pleasure, and take their living where they could find it, would compel their grain-growing neighbors to secure themselves against their ravages, by building fences around their crops. They did not know that they could be the owners of innumerable flocks and herds, and at the same time dispense with the labors of their servants in guarding them, and transfer the burden to their less fortunate neighbors, who kept little, if any stock. They had not found out, that it was more for the interest of the stock raiser, that their neighbor should watch and heed his barley field, than for them to herd their stock. They had not learned that a neighbor might be innocently robbed, even, when done by proxy. The earth was too young and they were quite too "green" in the art of appropriating the labor and toil of others to their own use, without an equivalent. These are the discoveries of more modern times.

Progress seems to have been the motto in every successive age of the world, and new inventions have been sought out, among which no one has worked a greater benefit to the stock raiser, and no one a greater harm to the grain grower, than the system which allows all animals to run out, and compels all crops to be fenced in; some of the mischiefs caused by these modern usages will be briefly noticed.

Our present customs and laws concerning fencing against cattle, form the most burdensome, unjust and oppressive system of taxation to which this, or any other country ever peaceably submitted. A similar tax for any other purpose, would cause a rebellion; and the only reasons which can be assigned for the apathy existing upon the subject, is, that people have been born under it, and grown up with the burden upon them, which has so accustomed them to it, that it has become a part and parcel of themselves. As our fathers did, so we do; as they thought so we think, and thus the system is perpetuated from generation to generation.

Burdensome taxation, has been mentioned as an evil growing out of our fencing system. This will be more readily seen by glancing at the statistics of fencing.

At a moderate estimate, the annual expense of fencing in the United States, is upwards of one hundred and fifty millions of dollars. The above sum includes simply the estimate at seven per cent. per annum on the first cost, with the necessary repairs and use of ground occupied by them. In the single State of New York, more than ten millions of dollars are expended annually to support their fences. Pennsylvania a proportional sum, and other States nearly in a similar ratio.

We have no precise and accurate data as to the amount expended in Wisconsin for fences, but from a rough estimate, it is found to exceed the original amount paid for all the enclosed land in the State; and we may be considered as speaking within the limits of probability, when we say that the fences of this State have cost more money than the gross proceeds of all the surplus agricultural products of the State, up to the present time. That a certain amount of fencing is necessary, no one will deny, but that a system of such intolerable inconvenience and expense should be prolonged and voluntarily persevered in, is unaccountable and absurd.

The worst feature in the system, and that which should stamp it with unmeasured condemnation, is its injustice, inequality, and oppression. Men can endure taxation, and burdensome taxation too, if they feel that it falls equally upon the commonwealth; that the burden is equitably divided, and that one pays no more than another, according to his ability to pay. But when a tax is imposed upon one part of community for the benefit of another part; when A. is largely taxed for the benefit of B. exclusively, then it is that "forbearance ceases to be a virtue;" then it is that men arouse, under ordinary circumstances, and look after their rights; and are sensitive in regard to them. Our present fencing system falls but little short of being a case precisely analagous to the one supposed above. Take an illustration: A. is a wealthy man just come to Wisconsin to embark in agricultural pursuits; he looks about and concludes, from what he can learn, that the country holds out unusual inducements for stock raising, wool growing, dairying, &c.; he purchases a farm with a view to the carrying on those branches of agriculture. He needs but a trifling outlay in fencing, of course, for there is a wide "range" for his stock, during the grazing part of the season, at least, and perhaps they can shirk for themselves, he thinks, for a large portion of the winter. His purchases are accordingly made and his stock turned out upon the common, and little more attention is required on his part; "but what is sport to him is death to his neighbors;" for they being poor men, or men of moderate means, unable to purchase stock, are compelled to turn their attention to grain raising. Now it would seem but reasonable that they should enjoy the privilege of doing so, but our laws and usages, strange as it might appear, say that these neighbors of A. must first make "a good and lawful fence, at least four and a half feet high," or their grain crops will be "free plunder" for A's. horses and cows. Thus these men are forced to incur the expense of fencing their fields, not for their own, but for the direct benefit of A. If our laws compelled, as they should do, A. to take care of his stock, either by fencing or herding, if he chose to turn his attention to stock raising; then his neighbors could pursue their business without being trammeled with the unjust and oppressive tax incurred for his benefit. Who cannot see the injustice and wrong in the case supposed? And who can dispute but that the case represents the true state of things? A. has an undoubted right to choose stock raising as a means for a livelihood; provided, he takes care to keep his animals from devouring his neighbor's crops, at his own expense; and his neighbors ought to have as good a right to raise their grain unmolested by his cattle, without taxing themselves to build fences for his accommodation.

There are other evils connected with our fencing system, which of themselves should be deemed sufficient reasons for abolishing it, were the advantages claimed for it two-fold greater than they are.

One half of our troubles, as farmers, originate in some way, in connection with our fences, either directly or indirectly.

In addition to the endless labor of building fences, gates, &c., the peace and good order of neighborhoods is oftener disturbed by some incident connected with fences than from any other cause, and we are almost compelled to acquiesce in a remark made by a certain writer that "it is next to impossible to maintain peace and good will towards men, when rail fences and stock ranges are in fashion." The cost of land wasted by being occupied by fences, is of little consequence, compared with the inconvenience resulting from the play grounds for noxious weeds and bushes, afforded by the fence corners, besides being a harbor for rabbits and other "vile vermin." They are also reservoirs for snow in winter and rain in summer, and are ever distilling upon the adjacent lands their cold and sour accumulations, so that nothing can attain a healthful growth in their vicinity.

They are excrescences in the eye of a lover of nature. To him, they so mar and disfigure the landscape, that their utility would be more than cancelled by their absence.

In most parts of continental Europe, there are no fences. One may travel day after day through beautiful fields bordering the road side, the various farm crops having no other separation than the line marked by the contrast, in color or kind, of the adjoining fields. The country exhibits all the variety and breadth of a native prairie. But the traveller in cultivated America finds himself continually hemmed in between two walls of wood or stone, without space to look either to the right or left, and if perchance, he might obtain a birds-eye view of the world at large, he finds it virtually covered with fences, looking more like a "windfall" or "slashing" than a cultivated landscape of growing crops "of varied hue."

The "no fence scheme" is not a new idea, even in this country. The doctrine has been ably advocated by some of the most popular Agricultural Journals in the East and South, and practical farmers of high standing for intelligence and acute perception, have advocated it, and to some extent successfully. In Massachusetts there are laws requiring the owners of animals to restrain them to their own premises. When the legislature of that State passed the law, many considered it an experiment of doubtful utility, and it was believed also by many, that the people would never sustain it. Time has settled the question, and the enactment of the legislature has been triumphantly sustained by the people, and they now, in that State, enjoy the privilege of "every man sitting under his own vine and fig tree, and none to molest him or compel him to build fence." They rejoice in the improvement, and recommend it to others as the thing needed. Circumstances, perhaps, in Massachusetts, had as much to do in bringing about the reform, as discussion and argument. Large tracts of land lying along the Connecticut River, varying in width from two miles to eight miles, were subject to the annual freshets or overflowings of the river, which rendered permanent fencing impossible. Those lands were too valuable to lie idle, and for this cause such a law as was needed for that portion of the State, was enacted as a general law, thus making not only their lands valuable, but benefitting the entire State in an incalculable degree. Shall Wisconsin follow the example of Massachusetts? Nature has not only intimated the propriety, but to a very great extent, seemed determined to coerce the farmer into the adoption of the measure by the sparseness of timber, and absence of other suitable material for fencing. Here, also, nature has given us a model country, a perfect specimen of landscape gardening. What the nobility of England expend their millions to procure, even on a small scale, here in Wisconsin, nature has given us, on her most magnificent plan. Here we have park scenery, without any effort of our own, and in such exquisite perfection, that we may not put forth a rude hand to mar its beauty.

What grouping of trees! What splendid lawns! What interspersing of flowers and shrubs! Now, shall we act the part of the Vandal, and deface and cut up this beautiful scenery, by our unsightly zigzag bulwarks, called fences? We say no; and we hope the sentiment will be reiterated by the farmers of Wisconsin, and that they will ask until they receive from the legislature, laws upon the subject of fencing, which shall be equal in their operation, and save our State from the ruin and curse of a fencing mania.

We have in the foregoing remarks expressed the convictions of our own mind, believing that the non-fencing practice is the one to be adopted, not only in theory but in practice, and that it is particularly applicable in our new and growing State.

Yet as it takes time to root out old prejudices and get rid of bad habits, we do not indulge the hope that it will immediately be adopted—and as in the mean time some fencing must be done, it is a legitimate inquiry: What is the best and cheapest material of which to construct fences, and what are the best methods of constructing the same?

In those localities where timber is plenty, and even where it is but moderately so, that, doubtless, is the cheapest and best material to use, in one form or another for building fences.

Perhaps a page from the history of our own experience in the fence department of Wisconsin farming would not be entirely uninteresting. About seven years ago we commenced farming in the valley of the Rock River. Our first business was fencing our farm. The timber being "oak openings," of that kind of which three trees are required to make a "rail cut," we concluded to take a "stake cut" from each and make what we call a "stake and cap fence." This kind of fence is made by splitting stakes from logs cut five and a half feet long, somewhat smaller than ordinary rails, sharpening the end which grows uppermost in the tree, then setting them in the ground from eight to twelve inches, by driving with sledge or beetle. The stakes should be set in a line and drove evenly upon the top to receive the cap board, which should be of white oak, sawed one by three inches, and nailed to the top end of the stakes, with an eight-penny nail in each stake. Such fence, if properly made, will last from ten to fifteen years. In setting, the largest stakes should be distributed among the smaller ones at suitable distances, so as to strenghten the fence when the smaller stakes begin to give way by decay. The strength and durability of this kind of fence depends much upon having a good cap board.

The portions of the trees remaining after taking off the stake cuts we cut up into lengths of six and a half feet, limbs and all, splitting those which could be split into two or four parts, a trench was then dug about two feet deep, into which the timber thus prepared was set, after which the dirt was thrown in and packed closely around the stakes, and the fence was complete. By placing the best sticks at intervals of six or eight feet apart, when the smaller and poorer portions decay there will remain a set of posts upon which to nail boards, if desirable, and thus perpetuate the fence for twenty years or more. This we denominate "timber fence," and it is so formidable in its appearance that cattle do not approach it.

Another very good and rather cheap fence, we have made from ten feet rails and shorter ones, say two to fourt feet, alternating first one and then the other, much in the style of a Virginia or worm fence, staked at the corners with perpendicular stakes, held together at the top by caps with two three-inch holes in each; thus securing it against cattle and high winds.

For a cheap and quickly made fence for inside purposes, we have used rails and "crotches," setting the latter in the ground about one foot; the distance apart must be governed by the length of rails used, always having them so near as to allow a good lap to the rails; after laying one set of rails there should be a pair of stakes over each crotch, into which lay another tier of rails, and the fence is made. We have various other kinds of wooden fences, the result of circumstances and necessity, but will not now describe them. We have about one mile of locust fence, which promises eventually to be very serviceable; this we made in the following manner:

The seed was sown in the nursery, and when two years old, planted out into "fence row." The ground for planting out, was prepared as for any farm crop; then with a plow, a furrow was turned from the centre of the row outward, into which the trees were set, at from eight to twelve inches apart. They grow finely and bid fair to make an impenetrable "timber fence," not a "hedge" as they have never been cut back for that purpose, but they grow as a line or row of trees.

We have a piece of about twenty rods of native thorn fence, upon which we have been experimenting, but think from what we can thus far discover, that its growth will be quite too slow, and require too much attention perhaps to be of any practical utility for farming purposes.

Our own experience in "sod fencing" has not been as extensive as in other kinds of fence, yet we have built somewhat with that material.

From our own experience and observation of the different kinds of fence built of sods, we prefer, to all others, what we call here, "single ditch fence." Our method of building this fence, is to lay off, on one side of the "fence line," a strip four feet wide for the ditch, cut the sod upon this strip lengthwise, into four equal courses, three of which are to be laid up, the grass side out, to form the face side of the fence. The face side of the fence should be set in, from the edge of the ditch, about six inches, leaving a corner or surface to prevent the crumbling and falling of the earth from under the bank by the freezing and working of the sides of the ditch. At the distances of four or five feet from the front of the face side, set the remaining course, grass out, to form the back side of the bank and to hold the earth in its place. The sod in both instances, should incline towards the centre of the embankment, so that the dirt, when thrown in, will not press out the turf.

The ditch may then be excavated to the depth of three and a half feet, the sides sloping so that when completed, it shall be one foot upon the bottom. The earth should be thrown between the two lines of sod, before mentioned, sloping back from the top of the face side to the top of the back side, forming an angle of about forty-five degrees.

Here is a fence made of earth, that nothing will attempt to get over, not even hogs; it being six and a half feet from bottom of ditch to top of embankment. To make the fence still more perfect, we have set a row of locust trees along the lower edge of the embankment, about one foot apart, which prevents cattle from injuring it from the inside. We have some ourselves and have seen a great length of the double ditch fence built in this neighborhood, which costs about the same price as the single ditch; but as the ditches are much shallower it is mere sport for cattle to play over it unless it is "staked and railed" or boarded along the top, either of which adds materially to the expense.

We have of the "single ditch" kind, about two hundred rods which has been built more than four years, most of it being exposed to the "herds of the prairie" at large; and the repairs on the fence for the whole time have not cost us to exceed two dollars. It is good yet. The most, however, that can ever be claimed for a sod fence is, that it answers a temporary purpose.

The sward of our prairies, has been temporarily, a very good substitute for timber; and without it, it would have been impossible, in many instances for our farmers to have secured their crops.

It has, however, in this region nearly fulfilled its mission, and accomplished its destiny, and is fast giving place to more permanent and safe fences.

Much has been said and written in favor of wire fences, and in some places they have been erected quite extensively, but upon the whole, are at present, rather losing in public estimation. They combine but few of the absolutely necessary qualifications requisite to a good fence. A good wire fence will cost quite as much, or more even, than a good board and post fence, and when made is not near as desirable. A formidable appearance adds one half to the strength of any fence in the eye of an unruly ox or bull, and as a wire fence can claim nothing on that score, it is subjected to the whole strength and force of any animal that may wage war against it. If it is built sufficiently strong to resist all attacks of animals unwittingly or intentionally made, it is, after all, an unthrifty looking affair. To see a farm fenced with wire, in the usual method, strongly reminds one that a commencement had been made—the posts set for a fence—but that the whole thing had failed, and the people had become discouraged with the undertaking and moved away. So long as fences are the order of the day, let us have substantial looking ones, and none of the skeleton apparition fixtures. At the same time a fence should be constructed, as much as possible to harmonize with nature and surrounding objects. Our fences, in a great measure, give character and tone to our farms, and in building them we should have an eye to their adaptation to the place and circumstances—that they may not in every instance appear as unsightly excrescences, and especially those adjacent to our buildings. Door yard and garden fences are quite too often the most prominent objects about the grounds—many people seem to think that an elaborate and expensive fence is the "thing needful" of all others to adorn their places—consequently the fence is made to appear as if the whole concern, house, barn, orchard, and even the land itself, were only tributary to it—placed there for its accommodation while the reverse of all this, is what should appear. The fence itself is, and should seem to be, the adjunct and not the principal—it should appear modest and unpretending—not too high, nor too compact, nor yet too prominent. It should be, and still appear not to be.

We will merely remark in respect to the kind of fence best adapted to secure the above named object, that some kind of hedge comes the nearest to our ideal of the requisite—in fact a hedge in many locations becomes a decidedly ornamental appendage.

Of the many kinds of trees and shrubs proposed for hedges but few will adapt themselves to our soil and climate. The Osage Orange will undoubtedly be found the best, should it prove to be hardy, as far north as Wisconsin, of which many doubts are entertained. The next in merit is the Buck Thorn, than which nothing can be superior for a cattle hedge in our climate. It is said to grow and flourish in all kinds of soil, wet or dry, in sunshine or in shade. The great difficulty in making a hedge, usually is, the failure to obtain a thick and compact base; this trouble is obviated by the use of the Buck-Thorn, as it will bear excessive cutting back and yet shoot again.

CULTURE OF GRASSES.

Burke, December 20, 1852.

Dear Sir:—The honor you have done me, in requesting me to furnish you with some remarks on the grasses, merits at once my acknowledgements and compliance. The vast grassy plains, of which I had read, became the early objects of my attention, and I could but observe the "base uses" that had been made of the bounteousness of God.

The grasses, which cover this ample field, are, in my opinion, destroyed by the absurd and barbarous practice of burning. The fires that annually devastate this fair field of nature have only one tendency, and no justification, either in science or practice; all that can be said of it is, that the weeds and old grass are consumed, to make way for a fresh spring of grass. But is this the case? Do not the weeds, as well as the grass, spring again? and do they not come of inferior growth after each successive burning? To take away by fire the products of the earth, is to remove the vegetable matter necessary for the re-organization of the plants, and to substitute a residuum of inorganic remains, whilst the plants, stripped of their natural covering, are left exposed to all the severity of the long winter frosts. I am prepared to prove that these grasses of the prairie are nutritive, more from their quantity, and extent, than from their quality; and do not, therefore, contend that but for these burnings, they would have been luxuriant pastures. Another cause exists for their scantiness of nutritive growth and for their short-livedness; and that is, in the hide-bound state in which they are every where found; roots matted, and entangled together into a turf, impervious to the spade, and only pervious to a flat plow-share, dragged by four yoke of oxen. That these grasses are not more nutritive and luxuriant is to be accounted for from their total want of cultivation. Were they either top-dressed with salt, or lime, or ashes, or above all with gypsum, or scarified, by each of which processes the roots become emancipated, an improved growth would appear; and this, in a degree, is apparent across any prairie over which there is a road. There we see a change of herbage, occasioned by the travel of the wagon, or the droppings of the horses.

On my farm, on a slip of unbroken prairie, subject to such cultivation as its proximity to plowed land admits of, I have the tall oat grass, the tall fescue, the fox-tail, besides others, in an improved state. I am of opinion, that if these indigenous grasses were subjected to cultivation, a class, every way suited to the climate, might be amply developed.

The timothy, so far as I have seen, seems to be the most luxuriant grass of the Western States; its length and thickness of growth, entitling it to all the favor in which it is held; but as a pasture, after cutting it for hay, it furnishes a sad lack of aftermath; but this appears to me a general defect here. All the grasses seem short-lived, producing a crop for the scythe, and no more. In the Eastern States, I read that first and second crops of the red clover are of general occurrence, and in high estimation; whilst in England, almost all the meadows which are not permanently laid down to grass, are sown with red clover and rye, or ray grass, seeds which ripen together, and produce rank, rich meadows, yielding two or three tons of hay per acre, of the very finest quality; and then producing a second crop not much short of the first, and then a good aftermath; but when the second crop is not taken, which is the practice of the best farmers, the aftermath assumes all the character of a meadow, browsing upon which, the cattle fill themselves without the fatigue of seeking for their food, and rest and fatten. Another class of meadows, consists of the land laid down to permanent grass, in which the timothy, red top, cocks-foot, fox-tail and fiorin are chief, and these need but a reservation in Spring from pasturage, to produce large crops of hay, of a quality more enduring than the clover meadows, and equally acceptable to cattle and horses. The quantity per acre of this hay, is not so large as the clover and rye grass; but it is finer, and very highly esteemed by all who feed horses for the turf or road. The former is termed new land, and the latter old land hay; and the difference of value amounts to five dollars per ton in favor of the latter in the English markets. These pastures of permanent grass, exist to a considerable extent in all the large farms in England, and are held sacred from the plow, by the land owners. Top dressing, with barn yard and other manures, is used to keep them in tilth, and occasionally they are ripped with the plow, at distances of eight or ten feet apart, that the roots may have room to expand, and that the hide or turf may be prevented from binding together. I have said so much of the grass seeds, of which the feeding pastures and meadows of England are composed, and which give to that country its perennial spring appearance, characterized by that eminent man, William Cobbett, as the consequence of the "drip, drip," of the atmosphere, common to that country. The variety and number of grasses termed artificial, is great, and appears to me unnecessary to enumerate; they are all good, and from their variety, most beneficial to animal life. From among them, I may, however, be allowed to mention the Lucerne grass, known to the nations of antiquity, and held by them in great estimation. Its requirements are a deep, rich soil, well manured and clean weeded. The soil so prepared by good cultivation, is sown with ten pounds of seed per acre, in drills of one and a half feet apart; and as soon as the plant appears, these intervals are stirred with the cultivator, and the plants weeded and cleaned by hoe and hand. It is advisable to crop it lightly the first year, but after that it may be cut several times, three at least; from such cropping I have known a produce of upwards of six tons per acre. It is a perennial, and therefore justifies all the care and attention necessary to the first stages of its growth. It is liked by all cattle, and its nutritive properties are considerable; it is well calculated for stall feeding, a practice which has given to England, above all other lands, the superior beef of which she justly boasts. I would not, however, have it understood that I prefer this grass so exclusively; on the contrary, I think red clover, which requires much less care in its cultivation, very little inferior. Sainfoin, too, of this class, with many of the leguminous plants, are equally advocated for superiority. The great point in my mind, is to increase the produce of the earth—a sense in which I would read all who write upon Agriculture. From Adam Smith downward, this saying will be maintained: "that he who makes two blades of grass grow where only one grew before, deserves well of his country;" and this compendium of the whole matter, induces me to mention two notorious instances of improvement, equally stimulative to the man of capital and the man without it. The Duke of Portland, one of the most liberal and largest land owners of England, converted four hundred acres of bog land, into the most fertile tracts of the midland counties of England, by turning the river Maun through it, or over it; the running water of the river flowing through Mansfield and partaking of its sewerage waters, as well as carrying with it the certain sewerage of Chipstone, constructed by the Duke, gave circulation to the stagnant waters of the morass, and life-blood to the plants. And this improvement was effected by irrigation chiefly; drainage was also used; and drainage, that vital renovator, of climate as well as of soil, has turned a wild, and wet, and trackless morass into a fruitful plain. Chat Moss, lying between Liverpool and Manchesser, consisting of several thousand acres of dead and profitless swamp, has been cultivated. An individual rented from the owner one thousand acres, at the nominal rent of one shilling per acre. He divided it into sections, and for fences, made wide and deep ditches, into which he drained off the waters, and obtained sound and stable land, in lieu of the unsound and water shaken swamp. An improved climate, too, took place; and a clear, instead of a foggy atmosphere prevails, the whole now being cultivated.

But I cease to trespass on your readers, or on the privilege you have afforded me. The agricultural knowledge of this, and of every other country, is open to all, and much of which they treat, practically known to many of your Association. That which appears to me to be the duty of those you desire to communicate with you, is to state that which in their own practice or observation they have found, or supposed to be, beneficial; and I think I cannot better fulfil mine, or contribute more to this end, than by urging, in conclusion to my cursory remarks, every one to produce more of the fruits of the earth than he has hitherto done, by adding science to his handiwork—to plow deep and to sow deep—to top-dress his pastures and meadows, and to burn nothing beyond what is necessary for the preparation of his food, or the warmth of his household.

I am, my dear sir,

Yours very sincerely,

J. BERKLEY.

To ALBERT C. INGHAM, Esq.,

Sec. of the Wis. State Agr. Society.

CULTURE OF GRASSES.

By Thomas P. Turner, Eagle.

As grass land, and old, luxuriant meadows are material features in a farm, and add much to its value, the mode of making them cannot be too well understood, as a grass can be found adapted to the soil, be it ever so sterile or ever so fruitful. Those only are grasses which produce one seed to each flower, and when rising out of the ground, have but one seed leaf. Some grasses are best for sheep and goats, and flourish in elevated districts; others are calculated for dairy countries and marsh lowlands; others for a medium situation, and for fattening cattle. Some yield most nourishment when cut green, others when in flower, and others when the seed is ripe. Some grasses will yield a better after-crop than others. Some seeds are dispersed by the wind while others drop when ripened.

It was long supposed, even by practical farmers, that the herbage of pastures and meadows consisted of only two sorts of grasses—natural grass and clover grass. Botanists first pointed out the number of distinct species of grasses which are to be found in natural pastures; but the number, the different soils, the merits and value of each sort, the habits and culture, are of very modern date. Mr. Sinclair has probably done more than any other person to bring the different varieties to the test of experiment, and ascertain their relative value. He says: "There are upwards of one hundred and thirty distinct species of grasses, besides varieties, natives of Great Britain; and there is no variety of soil intermediate between the high rock or the blowing sand, down to the marsh, the bog, even water itself, but is provided by the bountiful hand of Nature with grasses peculiarly adapted to grow and remain permanent on each particular soil and site. However similar many of these grasses may be when in the state of swarth, or cropped turf, no two species will be found to agree on the following important points, viz: the time of the herbage in the greatest perfection; the quantity and properties of the nutritive matter in spring, in flower, and when ripe; the aftermath; the property of reproduction; the rapid or slow growth after being cropped by the scythe, or depasturing; the luxuriance of the leaves when the culms are in flower, and when the seed is ripe; the nature of the soil which each most affects; and the degree of power which each species possesses of withstanding the effect of long-continued drought, or of long-continued rains. These particulars constitute a most material guide in the formation of a meadow or permanent pasture of the best quality for early spring produce, superior weight of crop, nutritive powers, and a constant supply of new herbage throughout the season, under every circumstance of unfavorable extremes of weather.

"The grasses of most value to the farmer will not grow close together, or the same sort, for any length of time, however thickly planted from seed. In one or two seasons, intermediate plants decay and leave vacant places; but when a variety of different species, adapted to the soil, are mixed, they grow close, form a dense bottom, and continue permanent.

"The different grasses, and other plants, which compose the produce of the richest natural meadows in England, are in number about twenty-six. From spring to the end of autumn, there is not a month which does not constitute the particular season of superior luxuriance or height of growth of one or more of these grasses.

"The sorts combined vary according to the nature of the soil. If sand is the principal ingredient, then we find that hard fescue grass, smooth fescue, fine bent, creeping soft, tufted-leaf bent, crested dogs-tail, smooth-stalked meadow, and meadow soft grass are the best.

"Calcareous soils abound with the rough-headed cocks-foot grass, meadow fescue, crested dogs-tail, hard fescue, perennial rye-grass, upright perennial brome, yellow oat, and sheep's fescue.

"Argillaceous soils encourage the following: meadow cats-tail, or timothy grass, rough-headed cocks-foot, Pacey's improved rye-grass, rib-grass or lambs tongue, fiorin, creeping bent, meadow fox-tail, tall oat-grass, and others of less note.

"A mixed soil of the above ingredients is found to give vigor to meadow fox-tail, meadow fescue, rough-headed cocks-foot, meadow cats-tail, meadow soft, rough high meadow, sweet-scented vernal, perennial rye-grass, and a variety of others not so abundant.

"A peaty soil has been found to abound with sweet-scented vernal, rough-headed cocks-foot, meadow fescue, roughish meadow, meadow fox-tail, crested dogs-tail, creeping bent (narrow-leaf) meadow soft grass.

"Dutch clover is an essential ingredient in every pasture. It will grow in every kind of soil where proper pasture grasses can exist."

It is a fact that twenty of these different varieties are sometimes found in a few feet square of turf of an old meadow; and land, the principal part of which was sand, has from the peculiar union of grasses, and a plentiful supply of water, fattened bullocks of one hundred and sixty stone (dead weight) and wintered two sheep per acre.

A soil consisting of a mixture of the three principal earths, has been found to have, on a yard square, twenty-two distinct species, and eleven hundred distinct roots of individual plants. These are the constituents of the soil in the grazing districts of Lincolnshire and Somerset.

The result of these inquiries is, that tillage land can now be converted into permanent pasture for fattening and dairy purposes in the course of two years, on almost any variety of soil, in the humid and temperate climate of England. Of course the seed must be selected properly for the sort of land and the elevation, so that there may be a succession of seeding from April to November. In sowing grass seeds for a permanency, it should be on lands properly cleaned and prepared for the purpose, without any admixture or any grain crop, which is sure to injure the succeeding crops of grass more than can be obtained by cutting the grain. A crop of grain acts towards the grasses more injuriously than a crop of weeds would do towards the grain. The soil for grass seeds should be particularly clean from weeds, as manure when applied to it makes no distinction between those plants that are wanted and those that are not wanted. It will invigorate all.

It may be observed, that land intended for grass ought to be that in which it will spontaneously thrive and flourish; consequently, if there is too much moisture, the grass will be injured by frost and rain, and will soon be superceded by rushes, and other aquatic plants; and on the other hand, if the soil is too dry, the grasses will be killed by the intense heat of summer, and will be succeeded by mosses, fern, &c. It might be supposed that this could be remedied by sowing such land with better grasses; and to a certain extent, that may be done; but experience has nevertheless proved, that all land has a tendency to re-produce those plants which are indigenous to the soil—and that, after a few years, varying according to the care and attention that have been bestowed upon the cultivation, the natural productions will supercede those which have been artificially sown. This is one of the strongest reasons assigned by English landlords, when they object to their tenants breaking up their old meadow lands, for it is one of the most difficult and uncertain operations of husbandry to reproduce it, from land newly laid down.

No land will make a good meadow unless the soil is sufficiently deep to allow the roots of the grasses to run down out of the reach of the summer heat, and sufficiently retentive to hold water long enough to contribute to the growth of the plant, together with such an absorbent substratum as will drain the moisture away before putrefaction takes place. Land of this description, therefore, should never be laid down to grass, unless it can be made retentive by the application of lime, clay, chalk, or other fossil manures that can be procured on or near the spot, especially marl.

Besides these considerations, there are other circumstances of very material moment in the laying down of lands for meadow pasture. Attention to early growth is of great importance, especially as, from a variety of unforeseen accidents, the most careful farmer may not always have a stock of food adequate to the consumption of his cattle. The seasons must ever produce great variableness in the forwardness or the backwardness of grass crops. The early grasses appear to be most coveted by cattle, and they will naturally thrive best on that which is most agreeable to their palate, so that an early bite, and early hay-making, and the consequent early use of the after-grass, are very important objects to the farmer.

An acquaintance with the peculiar soils, and relative hardiness of grasses is another requisite, without which no good meadow can be formed; and this can only be derived from actual experiment. Some grasses are less able to endure moisture than others, and of course flourish best in dry and upland situations; while others are totally unfit for dry soils, but vegetate luxuriantly in moist land; and a third class areonly fit for the most barren lands, and such as are unable to support any other kind of grass. Of the first description, are the smooth-stalked poa, smooth-stalked meadow grass, sainfoin, &c. Of the second, are the rough-stalked poa, or meadow grass, the flote fox tail and flote fescue, water poa or meadow grass, &c. And to the third belong the sheep's fescue, the hard fescue, &c.

An eminent English agriculturist, Arthur Young, recommended the following sorts of grass seeds for the different soils, and the quantity per acre affixed to each sort:

Clayey Soils.—Cow grass, three quarts; cock's foot, two quarts; dog's tail, four quarts; fescue, eight quarts; oat grass, two quarts; trefoil, three pounds; Yorkshire white, one peck; timothy, four pounds.

Loamy Soils.—White clover, two quarts; rye grass, two quarts; Yorkshire white, one peck; fescue, six quarts; fox tail, six quarts; dog's tail, four quarts; poa, four quarts; timothy, four pounds; yarrow, two quarts; lucerne, four pounds.

Sandy Soils.—White clover, two quarts; rye grass, four quarts; Yorkshire white, two pecks; yarrow, two quarts; burnet, six pounds; trefoil, five pounds; rib, four pounds.

Chalky Soils.—Yarrow, one bushel; burnet, five pounds; trefoil, six pounds; white clover, seven pounds; sainfoin, five pounds.

Peaty Soils.—White clover, two pounds; dog's tail, five quarts; cock's foot, two quarts; rib, two quarts; Yorkshire white, two pecks; rye grass, two pecks; fox tail, two pecks; fescue, two pecks; timothy, six pounds.

In laying down lands to grass, the most important primary object is, duly to prepare them for the reception of the seed. Hence the soil should previously be brought to the highest possible degree of cultivation; for, though land may be too rich for the production of grain, and of such crops as are raised for the seed, it is quite different in the case of grasses, or other crops where the object in view is the largeness and luxuriance of the plants. The richness of the soil, is, in this case, a most important consideration, because the richer and more fertile it is made, the more abundant crops will it produce, and the larger the stock of cattle will it support; whereas, the contrary effects must result from laying down to grass either poor land, or such as has been exhausted by the repeated tillage of grain.

With regard to the time of sowing, I have found, from repeated experiments, that autumn is preferable to spring. The proper season is from the last week in August to the first week in September, for all but clover, which should be sowed as early in the spring as the season permits. The ground should previously be brought into the highest possible degree of pulverization; otherwise, the irregularity of the surface will not only occasion an irregularity in the produce of the grass, but will likewise be found inconvenient when the meadow is mowed. This may be effected in various ways, either by frequent plowing and harrowing or by the raising of turnips, potatoes, Indian corn, or other fallow crops, which by the shade they afford, as well as by the culture they require during their growth, are calculated to reduce the ground to a friable state.

The following observations on the selection of different kinds of common food by sheep and cattle, were made by Mr. George Sinclair:

"Rye Grass.—Sheep eat this grass when it is in the early stage of its growth, in preference to most others; but after the seed approaches towards perfection, they leave it for almost any other kind. Horses and cattle are fond of it; the former particularly, when made into hay.

"Cock's-foot Grass.—Oxen, horses and sheep eat this grass readily. The oxen continue to eat the straws and flowers. This was exemplified in a striking manner in a field one-half seeded to cock's-foot and red clover; the other half rye-grass and white clover. The oxen generally kept to the cock's-foot and red clover, and the sheep to the rye-grass and white clover.

"Meadow Fox-tail.—Sheep and horses seem to have a greater relish for this grass than oxen. It delights in a soil of intermediate quality, as to moisture or dryness, and is very productive. In the water meadows, it often constitutes the principal part of the crop.

"Meadow Cat's-tail.—This grass is eaten without reserve, by oxen, sheep and horses. It seems to attain to the greatest perfection in a rich, deep loam.

"Rough-stalked Meadow Grass.—Oxen, horses and sheep eat this grass with avidity.

"Smooth-stalked Meadow Grass.—Oxen and horses are observed to eat this grass in common with others; but sheep rather prefer the hard fescue, and sheep's fescue, which affect a similar soil. This species exhausts the soil in a greater degree than almost any other species of grass, the roots being numerous, and powerfully creeping, becoming in two or three years completely matted together. The produce diminishes as this takes place.

"Crested Dog's-tail Grass.—The Southdown sheep and deer appear to be remarkably fond of this grass.

"Fine Bent—Common Bent.—This is a very common grass in all poor, dry, sandy soils. It is not palatable to cattle, as they never eat it readily, if any other kinds are within their reach.

"Sheep's Fescue Grass.—All kinds of cattle relish this grass, but it appears from trials made with it on clayey soils, that it continues but a short time in possession of such, being soon overpowered by the more luxuriant kinds. On dry, shallow soils, that are incapable of producing the larger sorts, this should form the principal crop, or rather the whole; for it is seldom, if ever, in its natural state, found intimately mixed with others, but by itself.

"HARD FESCUE GRASS.—This is certainly one of the best of the dwarf sorts of grasses. It is grateful to all kinds of cattle.

"MEADOW FESCUE.—This is seldom absent from rich meadows and pastures. It is highly grateful to oxen, sheep, and horses—particularly the former. It appears to grow most luxuriantly when combined with the hard fescue and rough-stalked meadow.

"TALL OAT GRASS.—This is a very productive grass, frequent in meadows and pastures, but is disliked by horses and cattle; this perfectly agrees with the small portion of nutritive matter it affords. It seems to thrive best on a strong tenacious clay.

"YELLOW OAT GRASS.—This grass seems partial to dry soils and meadows, and appears to be eaten by sheep and oxen equally with the meadow barley, crested dog's tail, and sweet scented vernal grasses, which naturally grow in company with it. It nearly doubles the quantity of its produce by the application of calcareous matter.

"MEADOW SOFT GRASS.—This is a very common grass, and grows on all soils, from the richest to the poorest. It affords an abundance of seed, which is light and easily dispersed by the wind. It appears to be generally disliked by all sorts of cattle. The hay which is made from it, from the number of downy hairs which cover the surface of the leaves, is soft and spongy, and disliked by all cattle.

"SWEET-SCENTED VERNAL GRASS.—Horses, oxen and sheep eat this grass, though in pastures where it is combined with meadow fox-tail, white clover, cock's-foot, and rough-stalked meadow, it is left untouched, from which it would seem to be unpalatable to cattle."

Of all the two hundred and fifteen proper grasses, which are capable of being cultivated in the climate of Great Britain, two only have been employed to any extent for making artificial pastures—rye-grass and cock's-foot grass—and their application for this purpose, seems to have been rather the result of accident than of any proof of their superiority over other grasses. For further information of the comparative merits and value of the different species and varieties of grasses, I would refer the reader to a work by George Sinclair, entitled "Details of Experiments on Grasses."

LUCERNE is of French growth, but was introduced into British husbandry about the middle of the seventeenth century. It flourishes most luxuriantly in deep, rich, friable loams, but it will thrive in sound, mellow soil of any kind. It is useless to attempt its cultivation on wet and marshy ground. The land must be kept clean from weeds, otherwise its luxuriant growth will be greatly impeded. It should be sowed early in the spring, as soon as the land becomes dry, and drilled in rows, two feet apart, so that by repeated hoe culture it may be kept sufficiently clean. Ten pounds per acre is the proper quantity of seed. Mr. Sinclair gives a most extraordinary account of its productions. He states that, at the time the seed is ripe, it produces seventy thousand seven hundred and eighty-five pounds per acre, but it loses nearly two-thirds of its weight in drying: leaving twenty-eight thousand, three hundred and fourteen pounds of hay, containing $1\frac{1}{4}$–64ths of nutritive matter.

The first use of lucerne was for soiling horses or other cattle, from four to five of which may be supported by the produce of an acre during the six summer months; the grass being cut and given to the cattle in a fresh state. This plant is also well calculated for the summer feeding of cows. I am inclined to think lucerne as valuable for the quality and frequent succession of the crops, and its duration in the soil, as for its fattening qualities. If often manured, and kept clean from weeds by repeated hoeings, it will last from fifteen to twenty years, and yield luxuriant to the last. It is well suited for milch cows, causing them to yield rich and abundant milk. It has been successfully employed in soiling sheep and hogs; and as the latter do not feed down so closely as the former, they may be admitted upon lucerne plantations with safety.

SAINFOIN vegetates with considerable luxuriance, on dry chalky soils, but its produce is far inferior in quality to the lucerne. It yields but eight thousand eight hundred and forty-eight pounds per acre, but then little more than half of it is lost in drying, and it contains $2\frac{1}{2}$64–ths of nutritive matter.

These, then, with the four varieties of clover, viz: white Dutch, trefoil, red clover, perennial clover or marl grass, constitute the best varieties of the English grasses.

The very rapid manner cattle take on flesh when grazing on the prairie grass in this State, during the summer, leads me to believe that some of the native grasses are very nutritive, and that a valuable variety may be selected for culture that might answer as good, and perhaps a better purpose, than the English varieties. One difficulty presents itself, and that is, in procuring any large amount of seed, as so little is to be seen ripe on the prairies which are not stocked. I have remarked also, that where these natural pastures are closely fed, the wild grass dies out, and weeds take its place; from which I draw the conclusion that they will not endure close cropping. Good tillage might obviate this, and render the plants more luxuriant and hardy.

The experience I have had thus far inclines me to think that the meadow cat's-tail, or timothy grass, sown with red clover, is the most certain to live in this climate. Timothy is a most valuable grass. It is eaten by all kinds of animals, and horses prefer it to every other kind of hay; it produces plenty of herbage early in the Spring, and it may be cropped until late in the season. When cultivated in union with clover, it is better able to endure the summer heat. Its roots run very near the surface, and it is on this account that it seldom produces much hay on high, dry soils, without clover. It is not, however, as good hay-grass as the rye-grass, from the thickness and toughness of its stem, and the deficiency of the latter-math; but when it is intended for hay, particularly to feed to cattle and sheep, it should be cut a week before it flowers. It flourishes best in this climate, in a rich, deep loam, in low situations.

The American Cock's-foot Grass, being a native of North America, should be more extensively cultivated. It grows luxuriantly in moist, loamy soils, and when kept closely fed, it affords early and excellent pasturage, for sheep; oxen and horses are also very fond of it.

The possession of the most nutritious food will enable the Wisconsin farmer to keep the best breeds of cattle. It behooves us, therefore, to endeavor to 'make two blades of grass grow where only one grew before,' and great will be our reward.

THE DIFFERENT BREEDS OF NEAT CATTLE.

THEIR COMPARATIVE VALUE AND ADAPTATION TO THE CLIMATE OF WISCONSIN.

BY THOMAS P. TURNER, EAGLE.

Of the various sources from which the wealth of nations is derived, there are none of greater moment, or which have a superior claim to attention, than that branch of rural economy which is the subject of this essay. The cattle of the farmer may justly be termed productive laborers, when we recollect the stimulus to industry, as well as the rapid circulation of capital which the farmer occasions, by furnishing constant employment to the numerous artificers who are occupied in manufacturing implements that are indispensably necessary to him, and when we call to mind the immense mass of materials which his productive labor supplies for the purposes of commercial intercourse.

Justly has Adam Smith remarked in his "Wealth of Nations," that "The capital employed in Agriculture not only puts in motion a greater quantity of productive labor than any equal capital employed in manufactures, but also in proportion to the quantity of productive labor which it employs, it adds a much greater value to the annual product of the land and labor of the country, while it increases the real wealth and revenue of its inhabitants."

The repeated failure of the wheat crop in this State, together with the increased facilities for the transportation of cattle to the eastern markets, uinte to render live stock an object of the utmost importance to the Wisconsin farmer; and notwithstanding the great advances made in other branches of industry, nothing has undergone a greater change of system, or has received more manifest improvement, than the breeding, rearing and management of cattle. The establishment of societies in Great Britain and America, for the encouragement of Agriculture, has greatly tended to promote inquiry and disseminate information on this interesting subject. It may be advantageous to commence with a concise outline of the principal breeds, and varieties of breeds of cattle, found in the United Kingdoms of Great Britain, as from these most, if not all of the stock in North America have sprung.

The wild cattle are still found in some parts of England, mostly at Chartley Park, in Derbyshire, and Chillingham Park, in Northumberland. They are the remains of the Caledonian cattle, which once extended through all the northern provinces of England, and the southern ones of Scotland, and some of which had found their way to the mountains of Wales. The following account is given of them, by the Earl of Tankerville, and by Mr. Bailey, of Chillingham: "Their color is invariably white, except that some of the bulls appear of a cream color; muzzle black or brown; the whole of the inside of the ear and about one-third of the outside, from the tip downwards, red or brown; the horns white, with black tips, very fine, and bent upwards. They have no manes, but some of the bulls have a little coarse hair on the neck, about an inch and a half or two inches long. The weight of the oxen is from thirty-eight to forty-two stone (of fourteen pounds), and that of the cows from twenty-five to thirty-five stone, the four quarters. The beef is finely marbled, and of excellent flavor." From the nature of their pastures, and the frequent agitation they are put into by the curiosity of strangers, as well as the practice of shooting them when needed for the butcher, they do not become very fat; yet the six years old oxen are generally very good beef, from which it may be fairly supposed that, in proper situations, they would fatten well. One of them was caught and kept, and became as tame as the domestic ox, thriving as well as any short-horned steer could do. It weighed sixty-five stone.* There is, however, a breed of the same cattle in Yorkshire, which is said to be harmless. From these, then, with judicious crossings are derived our present breeds.

The Devonshire breed is found in its purest state in North Devon.—Its peculiar qualities may be thus described: Small head, clean, and free from flesh about the jaws; its countenance light and airy; long and thin neck, free from dewlap about the throat; of a dark orange around its eyes and nose; thin and pointed ears, tinged on the inside with the same color: horns thin, and fine to the roots, of a cream color, growing with a regular curve upwards, and rather springing from each other; light on the withers; open bosom, with a deep chest; below the knee small and tapering; fine at and above the joint; straight on the back from the withers to the rump, on a level with the hips, which are wide and open; the hind quarters seated high with flesh, and long from rump to pin; thin, loose skin, with hair of a soft and furry nature, inclined to curl when the animal is in full coat and good condition, when it also

* Agricultural Survey of Northumberland.

becomes matted with darker shades of its permanent color, which is that of a bright, blood red, without white or other spots, particularly on the male ; a white udder may be passed over, but seldom without objection.

The North Devons are of hardy constitutions, and highly esteemed both for feeding and draught. For the dairy, they are not so much valued; the milk, though rich, being deficient in quantity. For all the purposes of labor, for docility or activity, strength or hardiness, this breed cannot be excelled. The avarage weight of the oxen, when fatted at four or five years old, is about eleven score per quarter ; that of full sized cows seldom exceeds eight. Although they do not weigh as heavy as several other breeds, they fatten most rapidly, and their flesh is of excellent quality.

The Sussex breed differs but little from the Devonshire, except in being somewhat larger and coarser. When pure, the cattle are invariably of a dark, red color. In other respects, they are thus described by an eminent breeder, Mr. Ellman, of Glynde, Sussex: "A thin head, and clean jaw ; horns pointing forward a little, and then turning upward, thin, tapering and long ; the eye large and full ; the throat clean, with no dew-lap ; long and thin in the neck ; wide and deep in the shoulders ; no projection in the point of the shoulder, when looked at from behind ; the fore legs wide, round and straight in the barrel, and free from a rising back-bone ; no hanging heaviness in the belly ; wide across the loin ; the space between the hip bone and the first rib very small ; the hip bone not rising high, but being large and wide ; the loin, and space between the hips, to be flat and wide, but the fore part of the carcass round ; long and straight in the rump, and wide in the tip, the tail to lie low, for the flesh to swell above it ; the legs not too long ; the finer and thinner in the tail the better." On a comparison between the Devon and Sussex breeds, the former are thinner, narrower and sharper than the latter, on the top of the shoulder, or blade bone ; the front of the shoulder generally projects more, and they usually stand narrower in the chest ; their chine is thinner ; they are flatter in the barrel, and hang more in the flank ; but they are wider in the hips, and cleaner in the neck, head and horns, and smaller in the bones than the Sussex. The distinction between them is, however, not very striking. They are equally profitable to the grazier ; and as working cattle, they both stand unrivalled.

The Hereford breed is a variety of the Devon and Sussex, but is larger and weighter than either; being generally wider and fuller over the shoulders and chine, and the breast or brisket, as well as the after part of the rump. The prevailing color is a reddish brown, the face is white; the hair is fine and the skin thin. In the true Hereford breed, the bone does not project in the point of the shoulder—in some breeds it forms almost a shelf—but on the contrary, it tapers off gradually. They are very wide before, and in their hind quarters equally heavy; the tail sets low, and a great distance from the point of the rump to the hip; the turst is full, broad and soft; the horn pushes aside a little and then turns up thin and tapering; the animal handles remarkably well, and is especially mellow on the rump, ribs and hip bone. The quality of the meat is not hard, but fine as well as fat; little coarse flesh about them; the offal and bone being small in proportion to their weight, while their disposition to fatten is equal, or nearly so, to that of any other breed. They are, however, illy calculated for the dairy. They arrive early at maturity and are excellent at the plow or team; but it is as fatting stock that they excel. Hereford cows are comparatively small, extremely delicate and light fleshed. There is a more remarkable disproportion between the oxen and their dames, than is to be found in any other breed; the oxen often exceeding three times the weight of the cows.

The short-horned cattle, under which denomination are included the Holderness and Teeswater breeds, have been supposed to derive their origin from a cross with some large bulls that were imported, in the last century, from Holland into Yorkshire. And in the east and north ridings of which county, the two latter breeds have been long established, and deservedly esteemed; and it is from some of that stock, or at least from a cross between that stock and some of the progeny of the Dutch and Teeswater cross, that the present improved short-horned cattle, now generally distinguished as the Durham short-horns, are descended.

This breed was introduced about fifty years ago, by the Messrs. Collings, of Darlington, and has rapidly risen in the public estimation. The cattle are of a large size, and beautifully mottled with red spots upon a white ground; their backs are level; the throat clean; the neck fine, but not too thin, especially towards the shoulder; the carcass full and round; the quarters long; and the hips and rump remarkably wide and even. They stand rather high on their legs, but this must be carried to a very little extent; they handle kindly; are light in their bone, in proportion to their size, and have a very fine coat and mellow hide, with a fine, tapering tail, set low. They possess the valuable properties of fattening kindly at an early age, and of yielding large quantities of milk; but the quality is not as rich as the Devons, or many other breeds. They also possess a rather tender constitution, and it is sometimes difficult and expensive to keep them during the winter in England.

Of this breed, Mr. Charles Collings, of Ketton, sold a bull, Comet, at public auction, in the year 1810, for the extraordinary sum of one thousand guineas. Many of the descendants of Comet attained to a large size, amongst them the Lincolnshire ox, so called from being bred in that county, whose live weight was three thousand seven hundred and twelve pounds.

The long-horned cattle are descended from a breed which had long been established in the Craven district, in Yorkshire. Some cows of this race, and a Lancashire long-horned bull, were brought early in the last century, by a Mr. Webster, to Canley in Warwickshire, where they produced a stock that soon became remarkable for their beauty of form, and propensity to fatten. Of this Canley stock, the late Mr. Robert Bakewell, of Dishley, in Leicestershire, procured some cows, which he crossed with a Northumberland bull, and thus reared that celebrated race, so well known as the Dishley breed. They were long and fine in the horn, had small heads, clean throats, straight broad backs, wide quarters, and were light in their bellies and offal: and probably from the effects of domestication and gentle treatment, they were remarkably docile. They grew fat upon a smaller proportion of food than the parent stock, but gave less milk than some other breeds. The chief improvements effected, seem to have been in their aptitude to fatten early on the most valuable points, and in the superior quality of their flesh.

Notwithstanding the deservedly high reputation as a breeder, enjoyed by Mr. Bakewell, during his life, and which still attaches to his name, his judgment in selecting the long-horned cattle for his experiments, has been called into question. It has been asserted by Mr. Young, an eminent writer on agriculture, that, "had he adopted the middle-horned breed, either of Sussex, Devonshire or Herefordshire, in preference to the inferior stock, which the reputation of his name, and the mysterious manner (he was very scrupulous relative to communicating his judgment and practice in which his breeding system was conducted,) have introduced, it would have contributed to exalt the superiority of his stock beyond the power of local pejudices to remove."

The Galloway breed derives its appellation from the county of the same name, where, as well as in some parts of the lowlands of Scotland, these cattle are chiefly reared. In general, they are black, or dark-brindled brown. They are without horns, except occasionally a small, loose excrescence resembling a horn. They are smaller than the Devons, yet considerably larger than the north, or even the west Highlanders. "A true Galloway bullock," says a Scotch breeder, "is straight and broad in the back, and nearly level from the head to the rump; closely compacted between the shoulders and the ribs, and also between the ribs and the loins; broad at the loins, but not with hooked, or projecting prominences. He is long in the quarters, but not broad in the turst; deep in the chest, short in the leg, and moderately fine in the bone; clean in the neck and chaps, but stout rather than thin. His head is of a moderate size, with large, rough ears, and full, but not prominent eyes; and he is clothed in a loose and mellow, though rather thick skin, covered with long, soft and glossy hair."

Bulls of the most approved kinds have been introduced from England, but without any apparent benefit to the native stock. Although a cross between this and the short-horned breed is said by an eminent Scotch grazier, "to produce an excellent animal, possessing in a great degree the feeding qualities and best points of the short-horn, united with the hardiness and docility of the Galloway cattle," yet, while the first cross with the short-horn does produce a good beast, no good breeder would choose to continue his stock from these crosses. It is generally acknowledged that the surest method of improving the Galloway consists in adhering to the pure breed. They are a hardy race, subsisting on the coarsest pasture, and increasing rapidly when removed to more favorable situations. They fatten kindly on the best parts; their flesh is of the finest quality; and the joints being of a moderate size and more suitable for consumption in private families than those of larger breeds, they always command the highest price, with the West Highlanders, at the Smithfield market.

Of this breed there is a variety termed Suffolk Dun, from their color which is generally of a yellowish hue, and from the country in which they are chiefly bred. They are also polled, but possess little of the beauty of the original stock, and are chiefly remarkable for the abundance of milk given by the cows, on which account they are favorites with the London dairymen. The best milkers are said to give as much as eight gallons a day after calving, and six during a great part of the season.

The best Highland breed of horned cattle are reared in the Western parts of Scotland. Their horns are large, sharp pointed, and spreading; and their color is generally black, though sometimes brindled, or dun. Their hides are thick, and covered with long hair of a close pile, which nature seems to have intended as a protection against the severity of the climate under which they are bred, for they lose much of this distinction when reared in a southern country. In other respects they are not unlike the Galloway breed, many of whose best qualities they possess, and more particularly their hardiness of constitution, and beautiful symmetry. The straight and level backs, round and deep carcasses, and the quantity of good meat they yield, in proportion to their size, are most valuable points, and highly prized by the butchers.

The Ayrshire breed ranks deservedly high in the estimation of the dairymen, and the most approved form of the best milkers is thus stated by a Mr. Aiton: "Head small, but rather long and narrow at the muzzle; the eye small, but quick and lively; the horns small, clear and bended, and the roots at a considerable distance from each other; neck long and slender, and tapering towards the head, with but little loose skin hanging below; shoulders thin; fore-quarters light and thin; hind-quarters large and capacious; back straight, broad behind, and the joints and chine rather loose and open; carcass deep, and the pelvis capacious and wide over the hips, with fleshy buttocks; tail long and small; legs small and short, with firm joints; udder capacious, broad and square, stretching forwards, and neither fleshy, low hung, nor loose, with the milk veins large and prominent; teats short, pointing outwards, and at a considerable distance from each other; the skin thin and loose, with hair soft and wooly; the head, horns, and other parts of less value, small, and the general figure compact and well proportioned.

The Alderney breed are so named from the island on the coast of Normandy, whence they were first imported; although they were also bred in the neighboring islands, Guernsey and Jersey. The cows are small sized, but the oxen frequently attain a bulk and stature quite disproportioned to the female. Their color is either light red or cream colored, mottled with white; the horns short and gracefully curled, and the bone fine. They are chiefly valued for the dairy; not on account of the quantity of the milk which they yield, but for the richness of the milk, and the proportionate quantity of butter that can be obtained from it. The best cows are observed to have a yellowish circle round the eye, with the skin at the extremity of the tail of a deep yellow color —a remark it may be noticed, that has been made on good milkers of other breeds. As fatting cattle, they have few good points; yet so anxious are the inhabitants to preserve them in their native purity, that there is an act of their legislature which prohibits the importation of all foreign cattle, under severe penalties of fine and confiscation, including the destruction of the animal, which is slaughtered and given to the poor.

Such are the chief breeds of the Kingdom. It must, however be admitted, that there are great deviations in many animals of the same, and of the most approved stocks; and there are besides, many crosses, distinguished by the name of the district, or of the breeder.

From these views of the various species of neat cattle, the reader will probably be enabled to form some estimate of the value of the respective breeds therein described. I shall reduce them to three kinds: the long-horned, the short-horned, and the middle-horned. Concerning their merits and demerits, there has long been a difference of opinion among the most experienced breeders. The long horns excel in the firm texture and thickness of their hides, in the closeness and length of the hair, in their beef being finer grained, and more marbled and mixed than that of the short-horns, in weighing more in proportion to their size, and in giving richer milk; but they are inferior to the short-horns, in giving less milk, in weighing less upon the whole, in affording less tallow when killed, in being slower feeders, and of a coarser make, and more leathery in the under side of the neck. To sum up, the long-horns excel in the hide, the hair, and the quality of the beef; the short-horns in the quantity of the beef, tallow and milk. Each breed has long had its zealous advocates, and I am inclined to think that both kinds may have their particular advantages, in different situations. The western coast of England is often visited with impetuous winds and heavy rains. The thick hides and close-set hair of the long-horns would be a protection, while in the east part, the climate is milder, with more regular seasons, which would be more suitable to the constitution of the short-horn.

However excellent the long-horns became under the judicious breeding of the eminent Mr. Bakewell, the short-horns have now become equal, if not superior, to the kindly flesh sort of the Dishley breed, as the following extract from the Agricultural survey of Northumberland fully proves: "that the long-horns of the most approved stock have been introduced into the county, from the midland counties, by different breeders, and at different times; but, in most instances, they have given way again to the improved breed of short-horns. At the time the first report was published, in 1804, they had been totally abandoned by every breeder in the county, the improved breed of short-horns, from the stock of Messrs, Collings, having proved themselves much superior."

Since that period, continued exertions have been made for the improvement of the short-horned breed, and the great weight to which they arrive must always ensure them a high rank in the estimation of those graziers who possess land of sufficient richness to forward heavy beasts; indeed, the question seems to be in a manner settled. The popularity of the long-horns soon passed away. Their maker, (if he may be so termed)—the man who brought them to the state of perfection which they attained—had scarcely departed when the character of the breed began to change. "It had acquired a delicacy of constitution," says the author of the work on cattle in the *Farmer's Series*, "inconsistent with common management and keep; and it began slowly, but undeniably, to deteriorate. In addition to this, a rival—a more powerful rival—appeared in the field. The improved short-horns began to occupy the banks of the Tees. They presented equal aptitude to fatten, greater bulk, and earlier maturity.

The contest among the larger breeds of cattle now lies between the middle-horns and the short-horns, and particularly between the Herefords, belonging to the first division, and the improved short-horns, or the Durham cattle, belonging to the second. The short-horns may have some advantage in early maturity, and will grow to a larger size; but for aptitude to fatten, they are nearly equal. The flesh of the Herefords is of finer grain and flavor; in fact I believe the Herefords are not much beaten in either particular. The short-horn certainly has no rival for the dairy. Perhaps to those who are not strongly prejudiced in favor of either, this advice may be acceptable. Were I a breeder of Durhams, I should try a cross from a pure bred, gray Hereford bull; thus preserving the Durham color and improving the Durham quality of flesh, and at the same time lessening their frame; thus enabling me to keep a greater number of cattle upon the same quantity of land. One other difference there is between the Herefords and the Durhams. The former are most profitable for grazing, and the latter for stall-feeding. The Durhams, when in the stall, increase most rapidly in weight, and present at least a fair and even carcass.

There are four different breeds in Great Britain which are superior to any other cattle in the world, and are adapted to different soils, situations, and purposes: the Durhams and the Herefords for the best pastures; the North Devons for the short pastures on light soils; and the Scots for the wild and cold pasturage. The males of these breeds, with judicious crossing, would improve all other breeds. The relative estimation of the flesh of the principal breeds at Smithfield market, is quoted as follows, per stone of eight pounds to sink the offal:

Scotch Oxen	£0	4	8
North Devons		4	6
Leicester, Hereford, and fine Short-Horns . .		4	0
Lincoln Short-Horns		3	10
Coarse, inferior beasts		3	6

To the Wisconsin breeder of cattle, it is a matter of the utmost importance that he should select the most profitable breed with which to commence the occupation of his land. The first object of attention, then, is to consider the proportion between his stock and the quantity of food which will be necessary to support them. The nature, situation and fertility of the soils that compose his farm are equally worthy of notice, as well as the purpose for which he designs more particularly to rear or feed his cattle; whether for the dairy or with a view of supplying the market with fat cattle.

Formerly a great prejudice prevailed in favor of big-boned, large beasts, but it has been ascertained that this breed is, in point of profit, much inferior to the middle-sized kind. The feeding and fattening of cattle, whether for labor or for sale, is the most important object in the whole economy of the grass farm; hence the nature and fertility of the pastures should previously be considered, and the extent and quality of his other resources. It is highly important to select those beasts only which evince the most evident disposition to fatten with the least consumption of food, and depasture them upon such lands as are best calculated for the respective breeds, especially taking care not to bring cattle from rich to inferior soils, but wherever it is practicable, to choose them from lands of nearly the same quality as those destined for their reception. The larger beasts are preferable for the most luxuriant pastures, while in such as are less rich small stock answers best. Thus, the farmer who has fertile meadows, or deep marsh land, seeded to timothy or other artificial grasses, may select the Short-Horns, or Herefords; but he who has only indifferent grass should take care to proportion the size of his beasts to the goodness of their pasture, and I believe would be more successful with the North Devons, for it is better to have cattle rather too small than too large for the quality of the land. Hence it is found, in England, that in the rich grazing countries of Durham and Lincoln, the large breeds are chosen; while in Norfolk and Suffolk, the Galloways and West Highlanders are preferable to other breeds, being better suited to the lightness of the soil; and in the south-western counties, the North Devons predominate, although much of Somersetshire, in particular, is of superior grazing qualities. In that county I was engaged in rearing and fattening cattle extensively, and can give you some idea of the fertility of the land, when I state that we usually allotted one ox to the acre, to which a sheep is sometimes added, and both would be well fatted during the summer months; but, fertile as those districts are, they are surpassed by the richer land of Lincolnshire, the best of which will support one ox and fourteen large sheep during the whole summer on two acres, and five sheep on a similar space of land in the winter, or sixteen sheep on one acre throughout the summer. I have been told of some instances where one hundred and ten Lincolnshire sheep and fifteen short-horns have been fattened on fifteen acres—the last mentioned animals having been put to Spring grass out of the straw-yard, and fattened to the weight of eleven hundred and thirty pounds, carcass weight, by the ensuing Michaelmas.

With the exception of the Scotch cattle, I have reared and fattened some of all the other breeds herein referred to, and have found that the Short Horns and Herefords require very rich and much additional food, with greater care, and warmer shelter than the North Devons, and for that reason kept none but Devon bulls. In fact, I could procure more beef per acre of the North Devon pure breed than with the Short-Horns or their crosses, and therefore always preferred purchasing the former for grazing and breeding. In addition to this, their superior qualities for working, and their hardier constitutions are the principal reasons why I give them the preference for general use in this country, being better adapted to the climate and soil. There is cause to fear that the Short-Horns would degenerate under the best management, particularly when exposed to the rigorous winters. At that time, all stock should have close shelters, for warmth tends to keep the animal in good condition—being, in farmer's phrase, "half a belly full." The Herefords are somewhat hardier, and I think might be more profitably kept by those who have rich alluvial grass lands, and who can bestow the expense for winter provision and accommodation; and here I will remark, that the most important object in the feeding and fattening of cattle is, that such arrangements should be made, and such a supply of food provided for winter consumption, that the grazier may be enabled to keep them through that trying season, and sell them when meat brings the highest prices—from the beginning of February to the close of May. By this procedure, he will not only obtain more for the sale of them, than the autumnal markets would produce, but his stock will go off freely and every market be in his favor. He will also obtain the largest possible command of manure, and consequently be enabled to conduct his business to the utmost profit. The farmer who can winter the most cattle or sheep, will possess the means of keeping his land the most fertile, and will be enabled more profitably to breed and graze the larger kinds of cattle.

In order to graze cattle to the best advantage, the land should be well fenced in lots of about ten acres, so that they may be changed from one pasture to the other; beginning with the most inferior grass, and gradually removing them into the best. By this expedient, as cattle delight in variety, they will cull the uppermost or choicest part of the grass, and by filling themselves quickly, as well as by lying down much, they will rapidly advance towards a proper state of fatness; while the grass that is left, may be fed off with laboring cattle, and lastly with store sheep. Each field should be abundantly supplied with good water. Thus, the greater and stronger cattle will be separated from the weaker ones; for, if cattle of various sizes are indiscriminately mingled together, the more powerful beasts will master the others, driving them from place to place, and trampling upon or wasting more food than they can eat. In winter, also, each bullock should have a separate stall to feed and lie down in, and then the weaker ones would have their share of the food, and thrive faster by being allowed to rest in peace. All cattle, and fattening cattle especially, should be kept well littered with straw, the stalls regularly cleaned out, and the remnants of their fodder daily removed and given to other cattle. With regard to the most proper food, I would recommend the best made artificial hay, with roots, or winter squash added, finished off with ground corn; and lastly, with oil cake added, or flax seed ground with corn or barley, in the proportion of one bushel of the former to four of the latter. They should be often and regularly fed—say five times a day at least—for, according to the quantity of nutritious food a beast can be induced to eat with appetite, will be the rapidity of his fattening, the diminution of expense, and the increase of profit. The hay should be cut once or twice along the truss, and three times across it, so that it will be in square pieces of eight or ten inches, in which state the cattle will eat and digest it more readily, while their fattening is considerably expedited.

Good feeding and careful keeping will tend to improve even the inferior breeds of animals; while under careless management, in-nutritious food, and no shelter but what nature affords in this rigorous climate, the best varieties will soon deteriorate, and their progeny will rapidly degenerate.

With regard to the native cattle of this State, I must say that they are really better than I should expect to find them, when I take into consideration the manner in which they are reared. Often uncared for, seldom housed, and sometimes unfed, they certainly must have one good quality, and that is, hardy constitutions to endure such ill-treatment. Amongst them, I have occasionally met with tolerable well-shaped animals. Most of them, if not all, are too large in the bone, with much offal in the carcass; yet, I have seen some good-shaped cows, which if crossed with a pure bred Devon, Hereford, or Short-Horn, may rear a superior offspring; which, if judiciously bred from, would eventually supply a very valuable breed of cattle, such as would best endure this climate, and possess all the aptitude of fattening, and good milking qualities, nearly equal to that of the improved breeds of England.

One practice must invariably be observed by those who are endeavoring to rear large animals, and that is, not to permit the young heifers to have a calf until they are three years old. Allowing them to go to the bull at one year old is a most absurd practice—for when the beast is continuing to grow, and has arrived at that age when the form is most rapidly developing itself, a sufficient quantity of nutriment cannot be devoted to the calf. Either the mother or the offspring, or both, must materially suffer. Besides, it often happens that when such young heifers fall in calf, they miss in the following year, and thus nothing is gained in the stock, while to the animal itself it is evidently injurious. It should also be arranged that the young heifer should calve in the months of May or June, when the grass is most succulent, and a greater abundance of milk will be afforded.

Leaving this important subject to the serious consideration of the reader, I will conclude by advising the breeder not to permit his bulls to propagate their species until they are two years old; nor should they be used on the same farm more than two or three years, otherwise he will soon have among his stock the commencement of that deterioration which accompanies the "in and in" system. No more than twenty cows should be allotted to one bull, nor should the same animal be permitted to serve more than two cows in one day. He may then expect from good sires and dams a healthy and beautiful progeny, an ornament to a farm, profitable to its owner, and a pride to the State in which they are reared.

CATTLE BREEDING.

Green Bay, November 25, 1852.

Dear Sir:—Agreeably to your request that I should prepare a paper upon cattle breeding, I reply, that I am a great admirer of good breeds of cattle, and that a fine ox, cow, or bullock always receives my particular attention and approbation.

In treating upon this subject, there seems to be three things necessary to be taken into consideration, in order to enable the Wisconsin farmer to pursue successfully this branch of business, viz: the kind of stock to breed from, the method of breeding, and the profit and loss; for, while he may be induced to send East and procure blooded stock, so called, at a great expense, and while he may, by great care and attention, succeed in raising a very fine stock of cattle, still, when he comes to balance the account between himself and his cattle, he will find that they are indebted to him in a greater amount than they will bring in any market, and that, instead of being engaged in a profitable business, he has lost money by the operation. This fancy system of farming may do well enough for a few individuals, who are abundantly able, and have a taste that way, and may be the means of doing some good; but as a general thing, our farmers are too poor to pay much for fancy. They are after the dimes and dollars; they need them at the present time; and if I can say anything to assist them in this laudable pursuit, I shall consider myself abundantly rewarded. I do not think that the prairie, or any other section of our State, at this time, is in a situation, to make cattle raising to any great extent, profitable; or at any rate, to make it a leading branch of business. But, though I would not advise our farmers to make cattle raising their principal business, I would advise them by all means, to raise a few to dispose of every year; and as it is as cheap to raise a good animal as a poor one, they should be good, as a matter of policy. The first requisite in cattle-growing is to procure a good stock to breed from. Unless this is attended to, the care and attention necessary to produce a good animal, is partially thrown away upon an inferior one.

In selecting cattle to breed from, certain qualities should be sought after, and in whatever animal these are found in the greatest number, whether it has been imported from the north or south of England, or was brought from New York, or Illinois, that animal should be taken as a breeder. I should prefer, however, to take those that had been the longest time in this State, or native cattle (so called), if I could find those possessing the requisite good points; for in doing so, I should thus get those that had been acclimated, which is a consideration worthy of the attention of the farmer. At many of the cattle shows in the Eastern States, the first premium has been awarded to native cattle, even where the Durham and Devonshire stock were on exhibition.

The first quality to be sought for in a breeder is size or weight, as the ultimate destiny of all the cattle race is the shambles; and as then, however valuable they may have been in other respects, their weight must be the criterion of value, it is important that they should be of good size. They should be long-bodied, straight sided, with heavy quarters; a straight, plump ham, running down full to the gambrel joint; a good loin and heavy straight back; a straight, clean, bony leg, not too long; a small neck; small slim horns; a small clean head; a prominent eye; and a slim tail, running out small from the body like a thrifty hickory sprout, and of one color. The last requisite, however, is somewhat a matter of taste, and in any other respect not essential. They should possess a quiet, good disposition; this is rather an essential quality, whether they are to be used for work, the dairy, or for beef. It is much more pleasant to handle them as a working team or as milkers; and in the stall they fatten much easier than a peevish, irritable animal. They should be free from vicious habits. Notwithstanding the old adage that "a good cow may have a bad calf," and *vice versa*, yet, as a general thing, I would not select a bad cow with the expectation of having a good calf; and as the doctrine is pretty well established that the acquirements of an animal, as well as their natural qualities, are transmissible from the parent to the offspring, a cow that has acquired the habit of throwing down fences with her horns, kicking, or any other vicious practice, will be very likely to transmit those qualities to her calf.

Having selected the stock to breed from, the next thing for the consideration of the farmer is, how they shall be raised, or how taken care of. In many respects, good breeding is synonymous with good feeding; and the farmer should not, on any account, undertake to raise more cattle than he can keep well. It is absolutely necessary, in order to produce the full muscular development of the animal that it should be kept growing from the time it has calved until it has attained its full growth. They should be provided with warm sheds or stables through the winter to protect them from the inclemency of the weather. Without a warm shelter during the winter, and good keeping the season through, the best imported breed that is brought into our country will deteriorate and become no better than our common stock. Take, for example, a calf of the best Durham or Devonshire breed, and winter it on the north side of a straw stack, and there will be a shrinking away of all its fine proportions. It will become pot-gutted and hump-backed; and whatever care may be taken of it afterwards, it never fully outgrows the effect of its first wintering.

I do not think that the climate of Wisconsin, or of any State of the Union north of forty or forty-one degrees of north latitude, is as favorable to that perfect development of the cattle kind as a more southern latitude; and although they may be made to obtain about the same state of perfection as they do further south, it must be at the expense of considerable more care and attention than is required in a more temperate climate. I think that that portion of the United States embraced within from about the thirty-fifth to the forty-first degree of north latitude, is the best adapted to the production of good cattle.

Care should be taken of the health of the cattle; and as cleanliness is a preservative of health, the stables where they are housed should be kept clean and the animal free from vermin. The curry-comb or card should be used frequently, in order to keep the skin in a healthful state. When we consider that two-fifths of all the food and drink which is taken into the stomach, passes off through the skin by insensible perspiration; and that very many of the diseases with which the human as well as the brute animal is afflicted, are caused by obstructions or diseases of the skin, too much care cannot be taken to maintain in healthful action the functions of this important organ. The best way to effect this is by friction, produced by the card or curry-comb, applied as often as once each day. Cattle that are intended to be stall-fed through the winter, should be kept on the best of pasture the farm affords through the previous summer and autumn, so that they may go into the stalls with as much flesh on them as it is possible to put on with grass. The practice of putting very poor cattle into the stalls for the purpose of fattening them on grain, is, to say the least, very poor economy. In regard to preparing the feed for fattening animals, various opinions prevail, and various systems are practised by feeders. They all concur, I believe, in the advantage of having the grain ground or chopped; and afterwards, some practice the method of fermenting and souring the meal before it is fed. This method is liable to the following objection: all farinaceous substances, when exposed to heat and moisture, undergo three kinds of fermentation, the saccharine, the vinous, and the acetous. In the first stage, sugar is produced; in the second, alcohol; and in the third, vinegar. And while, in the first stage, the feed is very nutritious, in the second it is less so; while in the third, it is nearly worthless as a nutriment. The objection to this system of preparing food is, the difficulty of keeping it in the first, or even the second stage, especially if the weather, or the room where the souring tub is set, be warm; in that case, it passes very rapidly into the third stage. The consequence is, that one-half the feed is given in its sour, or worthless state; hence, giving food prepared by this process, is a great waste of the raw material. Others recommend the plan of boiling or cooking the meal before it is fed. I know of but one advantage this course possesses, and that is, that it is easier to digest, and in warm weather it is a very good way of preparing feed; but in cold weather, I would prefer to give the meal in its raw state, from the fact that it is harder to digest; and the more the stomach has to labor to digest its food (if it be able to overcome the difficulty) the greater the amount of animal heat which is thereby generated, thus contributing to the comfort of the animal. I prefer, therefore, to have all kinds of grain for feeding, ground, (the finer the better); not merely cracking the kernel, for, if grinding confers any advantage, the finer it is ground the greater is the benefit derived. It also brings in contact with the juices of the stomach, a greater number of particles to become assimilated into nutrition. I would also recommend grinding corn with the cob; or, if rye be used, to mix with it oatmeal or bran; thus increasing the stimulus of distension, which is very beneficial in the fattening process.

Cattle, when driven to market, should never be whipped, or driven on a run, as in doing so, there will be as much flesh driven off in a few days as was put on by the last month's feeding. They should be treated with kindness and gentleness from beginning to end. In fact, all of our domestic animals are greatly benefitted by kind and gentle treatment, and their growth and condition improved thereby.

In regard to the profit and loss of cattle-growing in this State as a leading branch of agricultural pursuits, there may be, and I have no doubt there is, a difference of opinion. That every farmer should raise a few to turn off every year, all will admit. This will enable him to dispose of his coarse fodder to an advantage which otherwise would be thrown away.

To make it a leading business, especially in the prairie portion of our State, must depend in a great measure upon the success attending the cultivation of the tame grasses. The grasses and herbage that grow spontaneously on the prairie make a very nutritious food for cattle in the spring and summer, and they gain flesh faster during that season than they generally do on the best cultivated pastures—but about the first of August, the prairie field begins to die, or dry down, and the first frost completes the destruction, so that it possesses little or no value—as an autumn feed. Cattle begin to shrink, or at best, do not gain any; the cows fail in their milk, and the best season for fattening cattle is lost; and the profit of the dairy is very much reduced for the want of good feed in autumn. One of the principal objects in cultivating the tame grasses is to supply this deficiency; and if the prairie soil will produce the cultivated grasses in such a way as to make a thick, heavy undergrowth, this end will be attained. It is not sufficient that it produces merely the stalk; it must spread out and cover the ground with a thick, heavy mat. This will enable it to resist the effect of the frosts and supply a nutritious feed until quite late in the autumn. If this can be effected, it will be quite easy to raise cattle on the prairies; otherwise, I think it will prove to be rather of an up-hill business. This will also apply to the dairy and wood-growing branches of husbandry.

I should advise the prairie farmer, if he wishes to cultivate the tame grasses, to seed very heavily, to sow at least one-half a bushel of timothy seed with one-fourth of a bushel of the large, red clover seed to the acre; or if timothy be used alone, from three-fourths to a bushel per acre. This may be considered expensive seeding, but the first crop will more than repay him for his extra expense; besides, it enables it more effectually to resist the freezing and thawing of winter and spring. The heavy timbered portions of our State, so far as I am acquainted with them, produces all the cultivated grasses and the clovers, very naturally, almost spontaneously; and when the timber is cleared off, and the grasses are cultivated, it will be one of the best grazing sections of the Union. The question is frequently asked, what branch of business the farmer ought to pursue, in order to realize the greatest amount of profit as the result of his labor. The wheat crop heretofore having been the main dependence of the farmer, and having partially failed for the last three or four years, and wheat, when produced, having been sold at so low a price, that it has almost discouraged him in continuing it as a leading business, has rendered it necessary for him to turn his attention, in part at least, to some other system of Agriculture. The question then is an important one, and ought to be well considered in all of its bearings; for much, very much of his future prosperity depends upon a correct solution of this question.

The soil of our State generally is rich beyond comparison, producing all of the summer grains usually grown in northern latitudes in the greatest abundance, and with good husbandry, there is but little danger of a failure; but the objection to raising these grains by those who live in the interior of our State, is, that the expense of hauling it over bad roads, a great distance to market, takes off all the profits, and leaves little or nothing to the producer. To this I answer, that the farmer should not (if he can avoid it) take the first kernel of his coarse grains off from his farm. When he undertakes to wagon it to market, his time and money are thrown away. He ought to be prepared to feed every bushel of it on his own farm.

If this proposition be correct, then the question arises, to what animals shall his coarse grains be fed, in order that he may realize the greatest amount of profit? In our present state of agriculture, it is my opinion that the hog is by far the most profitable animal the farmer can raise. In forming this conclusion I have not been influenced by the high prices of pork and stock hogs, that have prevailed during the last year, but I have taken into consideration the ruling rate for the last ten years, and the probability of its continuing at the same, or at higher prices for several years to come. The present demand for stock or store hogs, is very great, and there is little danger but that it will continue. The whole of the New England States, and a part of the States of New York, Pennsylvania, New Jersey and Maryland are looking to the West to fill their pens with store hogs. This demand has heretofore been supplied principally from Ohio, Kentucky, Indiana and Illinois; but there is no good reason why Wisconsin should not assist in supplying the wants of the East in this article, as her facilities for transporting it to market are equal to any of these States. It will also give the producer a choice between selling his hogs before or after they are fattened.

Stock hogs can be transported from any of the Lake ports in Wisconsin to the Brighton market for one dollar and fifty cents per hundred, so that it is a safe calculation to estimate their price on any farm in this State at two dollars and fifty cents per hundred, weighed up alive. And it is equally as safe a calculation to estimate the average price of pork at any of our Lake towns at three dollars per hundred, dressed. An hundred pounds of pork can be produced at a less expense, in this State, than an hundred pounds of beef, and it will command a higher price in any market. An hundred dollars, invested in pigs, will gain faster, even if the pigs be fed on grass, than the same amount invested in young cattle. Two dollars and fifty cents per hundred for store hogs is a much greater price than store cattle will sell for, in this State, weighed in the same way. Fattening pork presents this advantage: it enables the producer to feed out all of his coarse grain on his own farm, which he ought to do by all means; and instead of hauling it to market at a great expense, he can make it walk to market with comparatively but a very little expense. It would be interesting to see some four or five thousand bushels of grain, the production of our rich prairies, walking to market in a large drove of fat hogs.

In conclusion, permit me to say that I feel great interest in the welfare of Wisconsin farmers. Our prosperity, as a State, depends upon their success. May they therefore study to make themselves acquainted theoretically and practically with the science of agriculture, and carry their researches into all the natural sciences; and by a correct system of mental and moral education, be prepared to take a conservative part in all of the great moral questions of the day, and bring to the counsels of our State and Nation not only an enlightened mind, but a good conscience. That the Wisconsin State Agricultural Society may be greatly instrumental in producing this result is my sincere wish.

Yours, respectfully,

URIAL H. PEAK.

To Albert C. Ingham, Esq.,
Sec. of the Wis. State Agr. Society.

DAIRYING.

Fitchburgh, December 10, 1852.

My Dear Sir:—Your letter of Dec. 5th, requesting me to furnish my experience in butter and cheese making, and requesting my views in relation to the business of dairying generally, its present condition in Wisconsin, and its prospects for becoming a leading and profitable branch of business to our farmers, was duly received; and desirous of doing whatever may be in my power to hasten improvement in the agriculture of our State, I comply with your request by placing at your disposal the following thoughts and suggestions:

While I have never considered Wisconsin, as a whole, to be preeminently a dairying State, yet there are many portions which are well adapted to the business, and in which the farmers will find a source of profit equal to, if not surpassing, that realized in some of the best grain growing districts of the West. It is obvious that the native or prairie grass does not furnish the kind of pasturage requisite and necessary to render the business profitable—a fact which every farmer who has spent a few years in this country well knows. The advantages of pasturage upon timothy grass, clover and red-top, for cows, are readily acknowledged, but the opinion is so prevalent, that these grasses cannot be grown with such success in this State as in the older States of New England and New York, that many of our farmers are not disposed to make proper exertions to obtain such pasturage and meadows. Our marsh lands, however, are generally susceptible of being plowed and seeded with timothy and other cultivated grasses, and being the lands best adapted to the growth of grass, I am sanguine that they will yet be converted into meadows and pastures which will produce, bountifully, feed of the best quality for cows and stock generally. The heavy timbered land in the central and northern portions of the State, and the prairies of dark colored soil, it is believed, can be made to produce the cultivated grasses. The soil of burr-oak land and that of sandy prairies I regard as not so well adapted to produce grass as grain. Grain growing is the best use to which the latter soils can be put. It will readily be perceived that one of the greatest difficulties that lie in the way of profitable dairying is the labor and expense requisite to convert such land as is best adapted to the business into meadows and pastures that will furnish the best feed for cows. I doubt whether it ever will become a source of much profit while cows are pastured on the native grass in summer, and fed in winter with hay gathered from the marshes. Let none mistake my appreciation of the wild grass of this country—it has served an excellent purpose in the settlement of Wisconsin—and while condemning it as not the feed to make cows give milk in large or rich quantities, I readily admit that it will cause them to thrive and even fatten in summer. But all experienced farmers are aware, that the best food for fattening cattle is not invariably the best to cause cows to give milk.

As to the best breeds of cows for a dairy it is proper to remark, that a diversity of opinion prevails among dairymen. The Devons are held by many in high repute, while Durhams are preferred by others; but among the native breeds can also be found many of the best kind of cows. It requires considerable judgment and much experience in the management of cows, to select good ones in all cases; some writers mention certain infallible signs, but we are not aware that such indications are always found to be true indices of the worth of cows. But aside from the general appearance of the animal, there are undoubtedly some points worthy of observation, such as a good sized bag, sound teats of fair size, hair on the bag of orange color or dark brown, legs small and flanks deep, &c. There are but few farmers who are ignorant of the importance of selecting the best cows for dairy purposes, it is of no less consequence than their good management afterwards. There is one point especially which should be carefully observed in managing cows; they need good stabling during the winter season, and during cold weather at any season of the year. It is bad economy to leave cows exposed to the chilling blasts of winter for three or four months in the year, without even a hovel to shelter them from the storms and cold; animals are, it is true, by nature better prepared to endure cold than men, but still they are susceptible to its severities. When properly sheltered and cared for, they consume less fodder, are kept in better condition, and in the spring are in good order and healthy. Many farmers entertain the idea that cows that cannot be wintered in the open air are unprofitable; they want tough cows that can endure all weather. The most experienced dairymen in central New York, keep their cows in stables invariably during the cold weather, feed and milk them there, and take as much care of them as they would of their horses. Another important fact should be noted, and a remedy applied, which will increase the quantity of milk; during the latter part of summer and in the fall, the feed has become dried as it often does, and cows will give but little milk unless they are fed something besides what they can obtain from the pasture; this can be remedied to a great extent by feeding them corn stalks. Let farmers, in the month of June, sow corn broad cast, and as the season advances and cows begin to fail of milk, commence feeding them once a day with the corn stalks; the evening is the most suitable time, the effects are most salutary upon milch cows, and it well pays for all the labor and trouble incurred. During the latter part of winter, and through the months of March and April especially, it will be found highly beneficial to feed cows with mess of some kind; bran is excellent for this purpose. This management will greatly increase the quantity of milk. After cows have been fed hay in their stalls in the morning, clean out their mangers and place before them messes of the kind above mentioned, and they will eat with a hearty relish. Let them be turned out each day during the winter from ten o'clock till four o'clock in the afternoon; as the season advances and the weather becomes warmer they need not be kept so many hours in the stable. Another important matter should command the attention of every farmer. Cows should be pastured as near home as convenient; it is no benefit to milch cows to be driven three or four miles every day, nor to be suffered to run at large and range eight or ten miles, but a positive injury. They will not give the quantity of milk that cows do that are kept in pastures convenient and supplied with plenty of good feed. Care ahould also be taken that when cows are driven up at night to be milked, that it be done moderately; dogs should not be suffered to worry and chase them. Many think these matters of little account, but they are points which the most experienced dairymen do not fail to observe with due attention. Cows need plenty of water to drink, and they ought to be pastured where they can have access to it. Where they are suffered to run on the dry prairies, or confined in dry fields, they will come up at night in hot weather panting for drink; if they are pastured where there are no running streams, some means should be devised by which they can be supplied with water.

Very little has yet been done in Wisconsin, in making cheese: those who have done anything in the dairy business in this State, have mostly turned their attention to making butter; the fact that with but few cows, or with even one or two, people can make butter advantageously, while it requires a larger number than most farmers keep to make cheese, accounts for this. The process of making it varies considerable among dairymen, and it is impossible for me to say what manner of making it is most observed. An old and experienced dairyman, in New York, who has been in the business about forty years, has, for a long time, made cheese in the following manner: The milk after being strained into a tub or into pans according to the quantity obtained, is suffered to remain during the night for the cream to rise, which, in the morning, is taken off. Some prefer to let the cream be mixed with the milk, it renders it a little richer, it is true, but it would be difficult to tell the difference by the taste of a cheese made with all the cream, and one made with one night's cream taken off. The night's milk is warmed in the morning, and put in with the morning's milk. After having attained the temperature of blood-heat, let the rennet be put in; if the temperature is right, the milk will set and curdle in twenty-five or thirty minutes. It is important that the rennet which produces the curd, should be properly preserved, and kept ready for use; let it be thoroughly cleaned, and salted sufficient to keep it sweet and free from all impurities. When thus cured, when there is occasion to use it, let it be soaked in brine, and the liquid is obtained which curdles the milk. After the milk is properly set, which will be plainly indicated by the thick curdled appearance of it, let it be broken up as fine as possible; this can be done with an instrument made of tin called a cheese cutter. After this process the whey is dipped off, leaving the curd by itself, which should be pulverized still further by the hand, till it is crumbled into fine pieces. Then let a quantity of whey be put in a boiler heated, or as some dairymen practice, who have everything convenient, pass a tin heater through the vat containing the curd and whey. The proper temperature of scalding may be ascertained by squeezing the curd in the hand; if it is sufficiently scalded it will give forth a squeaking sound indicative of sufficient heat. Let the heated whey then be drawn off, and the curd salted with common salt, the quantity used is not uniform, some use more and some less; it is essential that enough be used to preserve it, and not so much as to render it impalatable.

This point can be attained by any one who exercises some degree of judgment; the taste of the curd is the guide of most people while salting. It makes but little difference whether the weather be hot or cold, the quantity required is the same. If a cheese is salted too much it will become hard, and on being broken will crumble, but if not salted sufficiently it will be tough and possess a strong, disagreeable taste. Care should be taken that while salting the curd, it be thoroughly stirred so that it be all seasoned alike; then let it be put into a cheese hoop of a size suitable to the quantity of curd, place it in a press, and let it be pressed till the whey is all pressed out which may be done in the space of twelve hours. The kind of cheese presses in use are various, and every farmer engaged in the dairy business has his preference. It is desirable that a cheap press be used if it will answer the purpose; some of the numerous patent presses are well calculated to secure their object, but they are too costly to be used by many. The old fashioned lever press is extensively used now by the dairymen of Central New York; it costs but little and it gives a constant pressure which is highly desirable in pressing cheese. The greatest objection to it is that it requires considerable space. After the whey is all pressed out let the cheese be taken from the press and the outside thoroughly rubbed with whey oil; this substance is made from the cream which rises on whey set in tubs or kettles; churn this cream in the same manner that the cream of milk is churned until the butter is made, then simmer it over a fire into oil suitable for dairy use. Some color the outside of cheese with coloring matter, rocoa or some other substance of a similar nature; this substance is also used to color the curd at the time of setting, and give a bright, reddish cast to a cheese when made. But all this is merely for the purpose of pleasing the eye; it adds nothing to the goodness of the article. It is the practice at the present time among dairymen to bandage cheese as soon as they are taken from the press and oiled; this is done with a kind of cloth called cheese sacking. There is a better method of putting the bandage upon the cheese, however; it will be recollected that the curd is first put into the cheese hoop for pressing in a sack made of coarse cotton cloth; after the cheese has been in the press six or eight hours it is necessary that it be taken out and turned over for the purpose of giving it good shape. When this is done, let a bandage, made to fit the circumference of the cheese and lap two or three inches over the sides, be put around it; then as the cheese is pressed the bandage becomes snug and fits perfectly. Bandages that are put on after the pressing is finished are apt to be too loose. The advantages of this are, that it prevents the cheese from spreading and cracking, keeps it in good shape, and prevents flies from working at it. Green cheese weighs considerably more than when thoroughly cured; it will weigh at least one-sixth or seventh more when green than at the age of three or four months. During the hottest part of the season cheese is most liable to crack; when this takes place, great pains should be taken to fill the cracks with pulverised cheese, which should be pressed in tightly and the cheese kept well oiled. Let them be turned over at least once a day without fail, and great care must be exercised to keep away flies, and have the shelves kept neat and free from insects of all kinds which are wont to gather in a cheese room. The room should be kept as cool and dark as possible during hot weather.

The directions here given properly apply to a dairy of cows numbering from ten to thirty, with which a cheese can be made daily. With a few cows it becomes necessary to have two day's time or more to accumulate curd sufficient to make a cheese of comely size; the curd of each day should be hung away in some cool place till enough is obtained to make a cheese; then let it all be scalded and pulverized together: then proceed as we have pointed out. The most common method of preparing cheese for market is to put it in boxes; a single cheese in a box made to fit. Let a piece of brown wrapping paper envelope the cheese. Thus prepared for market it suits purchasers. This manner of packing is far preferable to packing five or six together in a cask; it is less liable to spoil in hot weather, and looks better and nicer in market.

With regard to butter-making, I consider the best time for making it, in Wisconsin, to be in the month of June; since the pasture at this season of the year is the best and most nutritious, and cows will give at least one-third more milk then than in the months of September and October. At present most farmers pasture their cows on the native or prairie grass, and the fall of the year is not the best season for furnishing good keeping of this kind; the first frost that comes kills the grass, and then, unless cows are fed *mess*, they will furnish but little milk. There are some points with which most people are familiar relating to making butter; it requires a cool place in which to place milk for cream to rise in warm weather, and a room of proper temperature is essential in cold weather. I have seen what may be regarded the best possible arrangement for making butter in the hot season, which was a room above ground, cool, airy, with shallow vats made to set pans into, and a small stream of water turned to flow through them, thus cooling the milk; but such a convenience every farmer cannot have. The best that many can do is to provide a cool room, build a frame to set the pans of milk on, in tiers one above another; the advantage of this is, that the air can circulate freely about the pans, exposing the bottoms of them as well as the sides to its action. It is desirable that the milk be kept as cool as possible in hot weather, in order that the cream will all rise before the milk becomes sour; the butter is apt to have an unpleasant flavor if the cream is not taken off before the milk sours. Let the cream be put in stone jars and placed in a cool position till it is churned: care should be taken that it be not suffered to stand too long before churning, thus rendering the cream bitter and the butter disagreeable to the taste. The treatment after churning should be as follows: Let the butter-milk be drawn off, then let the butter be washed in cold water repeatedly as long as the water will be colored in the least by the butter-milk; then work it over with a ladle, not with the hands, until every particle of milk is worked out. Too many are not particular enough in this matter—if any butter-milk is left in the butter it soon sours and imparts a strong taste to it. We often hear the complaint that butter is too soft, especially during hot weather; the cream should be kept cool previous to churning. Butter should be salted with fine salt according to the taste: many salt it too much, thinking its preservation depends wholly on the quantity of salt used; this is an error, unless the butter has been thoroughly worked over and freed of the butter-milk, salt will not preserve it. In packing butter I have never used any other substance than salt and loaf sugar. For family use it is a good way to pack it in stone jars, putting down a layer of butter three or four inches in thickness, sprinkle the same with salt and pulverized sugar; and so on in layers till the jar is packed full. The same practice may be adopted in packing it into firkins for shipment. There is no difficulty in putting it down in this way; if care has been taken to free the butter of the milk, and properly salted. Then, if packed as here directed, it will keep in good condition as long as desirable. There are some dealers who object to the use of any other substance than salt in packing butter, on the ground that such articles as sugar or saltpetre impart a disagreeable flavor; but the experiment has been tried here in Wisconsin, and salt with sugar has been found to answer an excellent purpose. As to saltpetre, I am unable to say anything in relation to it as a preservative of butter—still I apprehend that it is not absolutely necessary that any other substance than salt be used in packing butter; in my opinion, the principal object to be attained after it is thoroughly salted and otherwise prepared for market, is to exclude the air from it as much as possible. This may be done by packing in tight casks. I have been informed that butter is shipped to distant parts—to South America and California—in the following manner: Small casks packed full are stowed in large hogsheads, and then the latter are filled entirely full with brine. Thus prepared it can be transported through a tropical climate in a perfect state of preservation. It is strange that a process so simple as that of making good butter is so little understood by so many who keep cows and pretend to do a little business at dairying. That neatness ought, above all things, to be regarded in making both butter and cheese is a fact well known to all who have anything to do with dairying, and I simply remark, that if any entertain the idea that butter and cheese made with slovenly hands will sell well in market because purchasers happen not to know who are the makers, they labor under a mistake, and the sooner they undeceive themselves the better for all concerned. Let these products of the dairy be sent into market, bearing their own recommendation, and one which will bear a rigid examination. It is pleasing to dealers to see butter and cheese in market that bears evidence of having passed through neat and careful hands.

As yet dairying has proved but a small source of profit in Wisconsin. Those farmers who have turned their attention to the business, are many of them of the opinion that it cannot be made a source of great profit, and consequently do not prosecute it with the expectation of realizing much therefrom; they regard our soil as not adapted generally to the growth of grass; the cost of clearing the heavy timbered lands, and the expense of converting the marsh lands into meadows of timothy and clover are regarded as great difficulties in the way of dairying. As the country grows older, and fills up with inhabitants, some portions of it will be found capable of being used for these purposes. At the present time many of our farmers keeping from two to six cows do not even make butter enough for the family use; they suffer their cows to range over the country during the summer season, and in the fall, when the feed has become scarce, they have made no provision to enable their cows to hold out in the quantity of their milk. The bad economy of wasting one-third of their time in hunting after cows that have strayed in the woods, or on the prairies, is not seen by them; and instead of enclosing fields and having some conveniences whereby time and labor may be saved, they allow the old way to continue. Many settlers, it is true, come into the new States with very limited means for commencing farming, but it is far better to enclose fields, and keep cows and cattle where they can be found, than to spend twice or three times the amount of time requisite to build a fence in searching after them. Every farmer ought to make at least butter enough for his own family use; it is very bad economy for them to buy it when they can just as well supply themselves from their own farms. For a farmer owning eighty or one hundred and sixty acres of land, three or four cows, and with plenty of means to keep them in good condition, to be seen in market purchasing butter for his own family use looks bad, and is a sad commentary on his management. We can sum up all that relates to this matter in a few words: When our farmers more generally realize the importance of dairying, we may look for some improvement in the stock of cows, and better care in their management. At present, every calf is raised, however meager, and what little can be realized from cows, in the shape of milk and butter, by suffering them to roam at large, taking their chance like wild beasts, is considered clear gain. But little is expected, and farmers are not disappointed in their expectations. Let farmers first turn their attention to fitting their lands for suitable pasturage for cows; let them take some pains to have good stock; keep only good cows, and keep them well, and they will soon find them not only a convenience as furnishing them a little butter and milk for family use, but also a source of profit yielding a rich return equal to the profits of grain growing. Farmers generally, in Wisconsin, must get into the dairy business gradually; the best that most of them can do at present is to make a little butter. This they are better prepared to do to advantage than to make cheese. If they will take pains to improve their stock every year, and seed down some portion of their farms with timothy and clover, the time will not be far removed when good dairies may be found in Wisconsin, and we shall no longer have it said that the country is worthless for this business.

It is one thing to talk and another to act, and it is no less requisite for farmers to set about this business in earnest, than to discuss the subject, acknowledging the facts which have been here presented, and still suffer year after year to pass, and no efforts to be made to bring about a different state of things. But when they shall feel, as well as say, that it is for their interest to give more attention to these matters, we shall look for a better state of things in the stock business. Much depends upon the women in the dairy business; to them is committed much of the care and management of things pertaining to it, more especially the making of butter; and it is incumbent on them to give heed to all those matters, which are of so much importance to a proper manufacture of the article. Let it be borne in mind, that there is no need of making poor butter; it is not a process difficult to be understood, but one of the simplest operations that can be performed. Be not indifferent to what you read, for it may be of some service to you. Be at some pains to learn the best methods of making butter and cheese, and you may find yourselves amply repaid for all the attention thus bestowed. The few thoughts which have thus hastily been thrown together, I present to the friends of agriculture, claiming for them that consideration only to which they are entitled, and hoping that they may not prove entirely unserviceable. With my warmest wishes for the prosperity of the Society, and of yourself.

I am, my dear sir, as ever, yours faithfully,

B. F. ADAMS.

To Albert C. Ingham, Esq.,
Sec. of the Wis. State Agr. Society.

FLAX CULTURE.

Symington Flax Factory, Mukwonago, Dec., 1852.

Dear Sir:—In compliance with your request, I take pleasure in again sending you a communication on the subject of flax, for the next volume of our "Transactions," in the hope that it may be found worthy of insertion therein.

I fear that I am writing upon a rather unpopular theme. There was, last spring, among our farmers a general movement towards something new in agriculture, in consequence of successive failures of the wheat crop, and flax was adopted by many as offering the best chance for a profitable change. I had shipped off all of my seed to Ireland and the Eastern markets, before the close of Lake navigation, and, therefore, could not meet the demand which poured in upon me from all quarters, for sowing seed; and, as a flax grower, I should have been glad that little could have been obtained elsewhere, for there is no doubt, but that a great quantity of spurious seed was imported into the State, (I may safely say unintentionally by the importers,) which, like the Canada thistle, will not be easily got rid of, and will prove a serious evil when flax and seed are, and not seed alone is, the object of sowing. Good flax cannot be produced from the common run of seed raised in Ohio, Indiana, &c.

It is very well, so far as it goes, if the farmers can make the seed pay of itself as a crop, and they never had a better chance of testing that, than this season presented, because, though very unfavorable for the fibre, the stalk being short in consequence of the drought in summer, there was probably as good a crop of seed as will occur in an average of five years. I say it is well if the seed proves a paying crop of itself, for that shows that no more profitable crop can be raised than flax, when we shall have mills established throughout the country, to use up the straw, which is by far the most valuable portion of it. It has always appeared to me, that turnips may, with equal propriety, be grown for the sake of the leaves, as that flax may be grown for seed alone. I rather fear that a number of our farmers have gone into the culture of flax, without due consideration, and, being disappointed in the result, a formidable check may be presented to its future extension, simply because we have put the cart before the horse—grown the flax before we had the appliances for its preparation in scutching mills. Why, in the present abundance of capital at the East, the general extension of enterprise of all kinds to employ it, and the pressing demand for flax in our own manufactories, no more attention should have been devoted to this article, is beyond my comprehension. There is certainly no lack of encouragement. A gentleman, interested in the manufacture of threads, who visited me last summer for the express purpose of seeing what foothold flax growing had taken in the West, wrote me on his return, as follows: "On passing through New York, I endeavored to get some of your flax from your agent there, but he had sold out, and failing to get American flax to suit our purpose, we have been compelled to order our supply from Holland."

My exertions to introduce, and advice as to carrying on the trade, not recklessly by large sowings, but systematically, with mills to keep pace with the growth, are on record; and it will be a matter of surprise ten years hence, when flax shall have become, as I doubt not it will, a staple article of agricultural produce, that so much apathy should have been exhibited respecting it at the outset. I do not mean on the part of farmers, for they, I think, have done rather too much, but manufacturers East, and directly interested owners of water powers here, might have embarked capital advantageously in this branch of business.

I have stirred up all within my reach, still, after five years labor, only one mill, besides my own, is at work in Wisconsin, and that not through my influence.

I expect the next published statistics will show an import into the United States of 1300@1500 tons of flax, while we, in Wisconsin, with excellent soil and climate for raising it, contribute only some 40 or 50 tons to the consumption.

So far as I have got returns for my flax of 1851, the prices realized have been from twelve and one-half to fourteen cents per pound; what I have since sent forward, but of which I have not yet advice of sale, should bring in the same proportion from fifteen to seventeen cents, being of superior quality.

I send you a sample of flax of my crop of 1849, which has been treated exactly in the manner practised in the celebrated Courtrai District on the frontiers of France and Belgium. This sample is, perhaps, a little better than the rest of the crop which was managed in the usual way in the fall of 1849 and spring of 1850, but nothing appears in it to warrant the adoption of the Courtrai system here. As I said in my last communication, that system is to hold the crop over for three years before rotting; I believe that this sample owes its superiority to the adventitious circumstance of having had first a covering of snow and subsequently sunshine when on the grass.

I send you a pamphlet on the subject of flax, printed for private circulation, by the eminent engineers, Messrs. Fairbairn of Leeds, England, furnished to me by my friend Mr. Hartshorne of Philadelphia. It contains by far the best instructions for the management of all the processes through which flax has to pass that I have seen in print. Part of it is inapplicable to our present position in Wisconsin, that relative to the hackling and spinning; but probably that portion which treats of the raising and general management of flax as a crop might be instructive to the readers of the "Transactions," if they keep in view the modifications which our soil and climate need, as detailed in my last communication.

I would especially direct attention to the simple machine for taking off the seed, described therein, which will do the work well, and speedily, without injury to the fibre. I had a model of one of my own invention ready to send you, but on reading this, I put it aside for the present.

I regret I have so little of importance to contribute to the forthcoming volume of Transactions, but knowing, as you do, the warm interest I take in the prosperity of the Society, you will take the "will for the deed."

I am, dear sir,

Yours most sincerely,

JOHN GALBRAITH.

To Albert C. Ingham, Esq.
Sec. of the Wis. State Agr. Society.

[*Extract from Messrs. Fairbairn's Pamphlet.*]

INTRODUCTORY OBSERVATIONS, AND DESCRIPTION OF THE MODES OF GROWING, RETTING, AND SCUTCHING FLAX.

There are few textile manufactures that present more interesting points to the inquiring mind than that of *Flax;* whether we consider its rapid extension, or the great changes that have taken place in its manipulations during the last twenty years; that extension and those changes together producing, as they do, a simplicity and an economy which have resulted in placing within the reach of many a comfort, nay, even a luxury, that was previously attainable by few. For in the linen manufacture are to be found fabrics of greater beauty combined with usefulness, than perhaps in any other. This manufacture likewise affords a most striking lesson of what machinery is capable of achieving, in converting raw produce into finished fabrics; for few materials have presented so many difficulties, or required such a variety of mechanical contrivances, to bring them into a useful state, as the one on which we are now about to treat. To trace these processes and point out the mechanical means by which these difficulties have been overcome, shall now be our endeavor.

In a treatise of this kind, it would be out of place to enter very minutely into the agricultural operations required in the cultivation of flax; though it may be satisfactory to some of our readers to have a general sketch descriptive of such as are now employed.

The flax plant, (*Linum Usitatissimum,*) consists of a woody heart or boon, and the harl or flax fibre covered outwardly with a fine cuticle which encloses the former like a tube; it is cultivated for two purposes; first, for its fibrous material, properly called flax; and second for its seed, which is much used for feeding cattle, as well as for making that drying oil extensively used in a variety of arts, known in commerce under the name of linseed oil. The stem of the plant is round and hollow, and grows to the height of about two to three feet, and then divides into several branches, which terminate in blue flowers, consisting of five petals, and succeeded by capsules divided into ten cells, in each of which is enclosed a bright, slippery elongated seed. The leaves are long, narrow, sharp-pointed, and placed alternately along the stem and branches of the plant. As the roots penetrate downwards about half the length of the stem, the soils best adapted for its cultivation are those of a deep free loam, such as are not liable to become too much charged with moisture, or too dry, but capable of being rendered fine by tilth, such as those situated in a valley bordering upon a river. If there be water at a small depth below the surface of the ground, it is thought by some still better, as is the case in Zealand, which is remarkable for the fineness of its flax, and where the soil is deep and rather stiff, and with water almost everywhere at one and a half feet or two feet below the surface. But if well manured and tilled, and if the seasons are not too dry, fine flax can also be produced on high land; it should not, however, be in too great a state of fertility, nor be too much exhausted; as, in the former cace, the flax is liable to be too luxuriant and coarse, and in the other, the produce would be very small. Light, sandy or gravelly soils seldom answer well.

With regard to the choice of seed, it should be of a bright, brownish color, oily to the feel, and at the same time weighty. The seed from Holland not only ripens sooner, but also yields a greater quantity of fibre than most others. American seed produces a common fine flax; Riga seed a coarser sort of flax, but a greater quantity of seed than any other, and is suitable to a greater variety of localities. Riga seed, from the circumstance of being generally produced from land of inferior quality, when employed in any other than its native locality, finds an improved situation, and consequently on most soils produces a luxuriant crop, inclining, however, to rankness, but with a great abundance of seed; this seed, when re-sown on the same land, after the interval of a year, produces crops yielding the best qualities of "fibre," though for subsequent re-sowing it becomes degenerated. The rapid progress of agriculture at the present day, renders it impossible to fix at what period in the rotation of crops that of flax should occur, though the general impression is, or rather was, once in seven to nine years. Experience has, however, proved thal it is never advantageous to re-sow the seed upon the land that has produced it more than once or twice.

In preparing land for the growth of flax, the great object should be to render it perfectly fine and mellow. With this view, where grass land is to be prepared direct for this crop, it should be broken up in the autumn, and left exposed to the atmosphere until the early part of the following year, when it should be pulverized and broken down by heavy harrowing, and then in the course of a week or two ploughed again, in which state it may remain till the time for putting in the seed, when another very light harrowing should be given, and ploughing performed afterwards with a light furrow. But as the expense of preparing grass land direct for flax may frequently be too great, it is desirable that some other crops should intervene, of such plants as do not occupy the land long, and which are benefitted by frequent stirring of the earth whilst they grow—such as beans, peas, turnips, &c., because repeated stirrings are required to render the mould sufficiently fine and loose, and to help to kill the weeds, which would otherwise do great damage to the flax. It is asserted that the Livonians, when they clear wood-lands, burn the wood upon them, and in this state prefer them to any other kind of soil for flax crops. If the land be stiff, it should be exposed to the winter frosts to moulder it, and loosen its parts. In the month of February, if the weather be not oo w et, some very rotten dung (if artificial manures are not used) should be laid on, and immediately covered over with the mould. The seed should afterwards, at the proper season, be sown, and harrowed in with a light or bush harrow, so as not to bury it too deeply.

From two to two and a half bushels is the ordinary quantity of seed required for an English statute acre when sown broadcast. At this point, however, discretion is required, for when the land is rich and fertile, and the season favorable, if too much seed is sown, the crop is in danger of lodging; and when that happens, particularly before the pods are formed, the flax proves inconsiderable in quantity and very inferior in quality. When cultivated in the drill mode, even at narrow distances, a much less quantity will be sufficient than in the broadcast; and in those cases of drill sowing where the intervals are large, scarcely half the quantity is required. When the crop is intended for seed, in whatever manner the sowing is performed, much less will be necessary than where the fibre is the main object of the grower.

The time of sowing is considered good from the middle of March to the middle or end of April. But the last week of March or the first ten days of April are best. However, in the south of Europe, it is sometimes sown in September and October, so that the plants remain on the ground all the winter. These autumnal-sown are not so productive in fibre, as those sown in the spring, but their yield of seed is better.

It may be laid down as a general rule, that land which is intended for flax crops should be brought to an exceedingly fine tilth, in the way directed above, before the seed is put in, and that it should be enriched by some sort of manure suited to the quality of the soil. Lime in a caustic state is injurious to flax; therefore, when it has been used for manure, it is better to intermit the culture of flax for a certain season. The "Royal British Flax Association," in their report of last year, recommend as a manure for replacing chemically, the elements of the flax plant, for one English statute acre, a composition of

Muriate of potash	30lbs.
Chloride of sodium (common salt) . . .	28 "
Burnt gypsum	33 "
Bone dust	54 "
Sulphate magnesia, (Epsom salts) . . .	56 "

And by the same authority, the following rotation of crops is suggested:

For 1851 . . . Flax.	For 1855 . . . Flax.	For 1859 . . . Oats.
" 1852 . . . Clover.	" 1856 . . . Barley.	" 1860 . . . Clover.
" 1853 . . . Grass.	" 1857 . . . Clover.	
" 1854 . . . Oats.	" 1858 . . . Grass.	

As flax, when young, is a very tender plant, and is more easily checked in its progress by weeds than any other that is usually cultivated in the field, it is therefore indispensably necessary that this danger should be well guarded against, in order to save future trouble and expense. It is contended by some that the drill mode of sowing is the better, where the seed is the principal object of the grower, as less is required to be sown, and better opportunities are afforded for weeding; the distances of the rows or drills should, however, vary according to the circumstances of the soil and the manner by which the crops are to be kept clean. For hand hoeing, ten or twelve inches would be sufficient, but for the horse hoe a wider space, of eighteen or twenty inches, would be required. When thickly sown, flax runs up in height, and produces fine soft fibres; when thinly sown, it spreads, and by the increase of branches produces more seed, and is not so liable to be beaten down by the weather, as the stems are stronger. When sown broadcast, the crops are rarely afterwards attended to, though it is very useful, and, indeed, necessary, when the plants have attained a height of two and a half to four inches, (which will be in about a month,) that they should be at least once carefully weeded. The custom of growing grass seeds along with the flax is little advantageous for either crop, but, on the contrary, is very likely to injure both.

Opinions are divided as to the best time for pulling the flax, where the fibre is the principal object. Some think it should be pulled while green, in order that the fibres may be softer and finer; others with the same view, pull it up before the seeds are quite formed; others again, not till the seed pods begin to open;—certain it is that if pulled too soon the fibres are soft and tender, and go too much into tow, and, if left till quite ripe, they are always stiff and harsh, do not so easily separate from the boon, neither do they bleach well; consequently it seems the most reasonable to pull it in a medium state, which is indicated by the stalks beginning to change from a green to a yellow, when the leaves begin to fall, and when the seeds begin to be of a brownish color.

It may be as well to observe, that when the stems are short and with many branches, it will be better to make the seed the principal object of the crop, and in that case to let it ripen before pulling. This period of maturity may be known by the points of the seed pods turning hard and sharp, and the capsulus beginning to crack; it usually takes place towards the end of July or the beginning of August.

In all cases the flax should be pulled up by the roots, and laid in small parcels upon the surface of the land, and great care should be taken to place the root ends even with each other.

In pulling the flax, it should always be done with the intention (for reasons afterwards shown) of stripping the seed; for this purpose it is desirable to lay it in handfuls partly across each other, as the process of stripping, technically called "rippling," is thereby facilitated, for the ripplers thus find the portions ready separated to their hand. It is important, even in this first operation, to separate and sort the flax according to the qualities which various parts of the land may have produced, as it is probable that each quality may require a peculiar treatment. Much loss is frequently caused both to the grower and consumer by neglecting this simple precaution. There are two modes of subsequently treating the crop, each of which are alike satisfactory in their practical results; the choice,. therefore, depends upon which may be the most convenient to the grower to adopt. Where labor can be had, and where it is desirable quickly to procure a money return, after thus pulling and sorting the crop, the first operation is to ripple off the seed. This is sometimes done after twelve or fourteen days' drying, but equally good, if not better, results are obtained by performing that operation immediately after pulling, as the flax requires less steeping afterwards, and is more easily separated from its woody stem. The rippling is performed by having the ripple placed on the middle of a large cloth, spread on a convenient piece of ground. The ripple is a sort of comb, consisting of one or two rows of long triangular teeth, placed upright, by which the pods containing the seed are removed from the flax. The manner of using this instrument is to have it firmly fixed on the middle of a plank of wood, at each end of which a rippler sits, when, by pulling the seed ends of the flax repeatedly through the combs, the operation is executed in a very complete and expeditious manner. The seeds afterwards require drying, when they will separate from the pods of their own accord. In large establishments, where other occupations may render it inconvenient to perform the above operations at harvest time, the flax may be dried without rippling, and stacked as corn, till a more convenient moment, say the following spring. By this mode of treatment, the seed capsulus become dry and crisp, and thus the seed can be separated from them by crushing them between a pair of iron rollers, so arranged that the seed ends of the handfuls of flax can be passed across the nip of the rollers, with its length in the direction of their axels—thus avoiding at the same time the danger of tearing the fibres, as in the hand rippling, and the necessity of subsequently thrashing the seeds from the capsules. The flax thus dried may require a little longer steeping afterwards. Even when there is no intention of saving it, the seed should be still "rippled," or otherwise taken off, as, in the operation of retting about to be described, it causes premature putrefaction, by which the flax is much injured; the imperfectly ripened seed thus saved will serve to be pressed for oil, &c. From six to eight, but sometimes from ten to twelve, bushels of seed are produced from an acre.

After rippling, the next operation is to expose the flax plants to a degree of acetous fermentation, termed "retting" or "rotting," to facilitate the future separation of the woody from the fibrous parts. The two most usual and general modes of doing this are known as water retting and dew retting. In water retting, when the flax has been cleared of its seeds, it is loosely tied up at each end in small bundles, and placed in an inclined position with its roots downwards, in pools or ponds three or four feet deep, filled with soft and nearly stagnant water—any water having mineral impregnations to be carefully avoided. These ponds should be made with facilities to change the water at pleasure. It is desirable that the bands for tieing up the bundles should be of bass, or other suitable material of little or no value, for if the flax itself is used, that part employed for bands becomes of flecked uneven color. The color of the flax generally is improved by a small stream of water continually passing through the ponds during the steeping, which, even from a stream comparatively soft, should be exposed to the atmosphere in these ponds at least a week before being used, in order to be further warmed and softened by its influence; but if from a spring of hard water, a much longer time of exposure to the air is necessary. The time required for steeping varies from a week to a fortnight, and depends upon the warmth of the weather, as well as upon the state of ripeness of the flax; the only certain criterion, by which to decide when the flax is sufficiently steeped, is the moment when the boon, or ligneous part, becomes brittle and separates easily from the fibrous; that is to say, when the rind will strip from a piece of the stem six or eight inches long, without breaking or tearing the fibre, or leaving any adhering.

This turn in the operation is very rapid, and therefore requires the most exact judgment and the closest attention; for if too long steeped, the fibre becomes softened, and consequently, weakened, whereas, on the other side, if the steeping is not sufficiently prolonged, the boon continues too adhesive to the fibre, and, consequently, creates waste and trouble in the next, or "scutching" operation. As the fermentation is found to proceed better in the absence of light, the ponds should be of such a size as to be easily covered over with straw and sods for its exclusion; upon this covering a weight of stones capable of easy augmentation or diminution should be laid, in order to keep the flax entirely under water, for if any part rises above, it will become discolored, and, consequently, spoiled; and as the buoyancy of the flax varies at different stages of the fermentation, this weight will require to be regulated, so that while always sufficient to answer its original purpose, it should at no time cause undue compression. When the operation has arrived at muturity, the bundles must be carefully lifted out of the ponds, and placed in a vertical position, so that the water will drain off, when they should be united, and the flax spread upon the grass.

In dew retting the same effects, or nearly so, are produced by leaving the flax spread upon the ground exposed to the weather for some weeks; but this mode occupies a longer time, the fibre is less solid, and is often injured by unfavorable weather.

Whether water or dew retted, the flax will require the operation of "grassing," which consists in opening and spreading out the bundles thinly upon the grass land, where it should remain from one to two weeks, whereby the boon is rendered still more brittle. When well dried, the flax must be tied up in convenient-sized bundles, and the greatest care must be taken to keep the root ends even with each other. If this be neglected, the flax is what is termed "badly handled," and wastes considerably more in the subsequent operations.

A much more scientific mode of retting has recently been introdueed into this country by an American gentleman, a Mr. Schenck, who, in a comparatively few hours, by aid of artificial heat, has succeeded in retting flax sufficiently. As this improved method is now being rapidly extended, under the auspices, not only of private capitalists, but also of public companies, the following description of it, taken from the last report of the Royal British Flax Association, may be of interest:

"Mr. Schenck's method consists essentially in the employment of hot "water. It is strongly recommended by the Royal Belfast Flax Society, "and has been long enough in operation to warrant the publication of "the opinion which is now almost universally entertained of its merits. "The following is a description of an establishment for the prosecution "of Mr. Schenck's process, situated on the Newport river, county Mayo. "It is taken from a report on the subject by Mr. M'Adam, the Secretary "of the Belfast Society. He says, 'The tenements, containing the vats "and drying shelves, are simple wooden sheds, of cheap construction. In "one end of the building are four vats, set paralled to each other, the "length of the house. They are made of inch deal, in the form of a "parallelogram, fifty feet long, six broad, and four deep. There are "false bottoms perforated with holes. Underneath these are introduced "the steam pipes, crossing the vats, and having stopcocks at their en- "trance, by which the steam can be let on from the main pipe, as "required. The steam is generated in a small boiler, which also serves "to turn two hydro-extractors—a patent apparatus used to drive off a "portion of the water with which the flax is saturated, on being taken "from the vats.

"The flax is packed into the empty vats, on the butt ends, in a half "sloping position, precisely as in the case of a steep pool, only one layer "being the depth. The water is then let in, and a frame fastened over "the top of the flax, answering the end of stones and straw, or sods, in "the steep pools—the prevention of the rising of the flax in the course "of fermentation.

"The steam is then let into the pipes by turning the stop-cocks, and "the water is some eighteen or twenty hours in becoming heated to the "desired point, 85° to 90°. The fermentation then commences, and no "further steam is required, which is in forty hours afterwards, being "sixty from the time of the admission of the water. At the end of the "sixty hours, the flax is taken out, the water allowed to run off, and the "vat permitted to cool. The same process is then repeated, with fresh "water and fresh flax. When taken from the water the flax is packed "in the hydro-extractor, which is a round vessel of iron, made to revolve "by steam power with great velocity, the water being driven out of the "flax on the principle of centrifugal force. Thirty beets or small hand- "fuls are placed in this machine at a time, and about twenty lbs. of wa- "ter are extracted in three to five minutes. A few hours suffice for the "contents of a vat, each vat containing two tons of flax straw. The "hydro-extractor only separates a portion of the water; the flax now "remains to be thoroughly dried. In summer, or indeed for six months "in the year, this can be accomplished as usual by spreading on grass "land in the open air. During winter, however, it is necessary to find "other means of drying. A shed has, therefore, been erected, commu- "nicating by doors, with the vat house, filled with ranges of shelves, "composed simply of railings of lathwood in five or six tiers. The flax "is spread lightly along these shelves by women, and the house is heat- "ed by steam-pipes. This house is capable of drying the full of one "vat per diem. The flax when dried is made up in small beets or hand- "fuls, of a size suited for feeding into the breaking rollers of the mill.

"About ten vats per week can be steeped in this establishment, say "twenty tons weight of straw, and producing, say two-and-a-half to three "tons of fibre. Thus, in one year, such an establishment would be "capable of turning out 120 to 150 tons of flax for market, being the "produce of 400 to 500 statute acres. The fuel used for the boilers is "principally 'showes,' with a small quantity of turf. Mr. Bernard esti- "mates the cost of steepnig, drying, heating, and scutching the flax, at "£10 to £11 per ton, which is £3 per statute acre. Subtracting say "10d. per stone, or 6s. per cwt. for scutching, the cost of steeping and "drying would thus appear to be about 24s. per acre,—a sum certainly "less than the usual estimates of these operations, as commonly per- "formed by farm labor."

Another method has lately attracted much attention, being supposed by Mr. Claussen, the inventor, and the public generally, to be new. Its intention is to do away with the retting or fermenting process now in use, by substituting a direct chemical action of dissolving the substances that unite the fibres to the wood and to each other. This he endeavors to effect by means of a strong caustic alkaline solution, followed by a slight acidulous mixture. After this, he proposes to prepare the fibre for mixing with cotton, &c., by cutting it into short lengths, and saturating it with a solution of bi-carbonate of soda; it is then taken out and immersed in dilute sulphuric acid. The action of the acid on the soda contained in the tubes liberates the carbonic acid, the expansive power of which causes the fibres to split into the proper degree of fineness. The idea of producing Flax Cotton from ordinary Flax, Hemp, and Tow, is by no means new; a description of a process for effecting this having been published in the Swedish Transactions for 1747, and the subject has attracted much attention in Germany from time to time. Somewhat later, Berthollet, in his Book on Dyeing, describes a process very similar to the one patented by Mr. Claussen, and which, from the curiosity of the coincidence, may perhaps not be found out of place if transferred to these pages. It runs as follows:—"A mode has been discovered of giving to "the dressed hemp, and even to the tow, a division and fineness which "qualify it for the same spinning processes as cotton; so that with this "preparation alone, or mixed with cotton, stuffs may be made which "have a much more considerable value than those of hemp in its natural "state. It may likewise be mixed with silk, wool, and even hair; and the "yarn resulting from these different mixtures furnishes, in its numberless "variety, materials for new trials interesting to the arts and to general "manufactures. The process consists of the following operations:—

"1. The fibres are covered with water, and left in it for three or four "days; after which they are boiled in simple water.

"2. They are treated with a ley, and then passed into the oxygenated "muriatic acid; operations which should be repeated alternately four times.

"3. The fibres are now transferred into a bath of water, charged with "1-100th of sulphuric acid, and left in it for half an hour.

"4. The fibres, when taken out of this bath, are washed very carefully, "and plunged in soap water. They are then stretched out, without "wringing, on hurdles, and left to dry."

Amongst other observations upon the process above described, Berthollet remarks that, "whether the finest flax or the coarsest hemp tow "be employed, filaments equal in their fineness and whiteness are obtained."

Giobert, in his "Bibliot. Ital.," vol. ii., gives some extended and exact observations on Berthollet's process, and he states them to be "the re-"sult of operations on a large scale, which have brought into the market "cottony cloth, and bales of this hemp-cotton, which were not distinguish-"able from ordinary cotton;" from which it appears that great attention had been paid to the subject, and considerable expense incurred in the experiments. Judging, however, from the fact that these so similar processes have fallen into desuetude, and also from the very small amount of success which has hitherto attended Mr. Claussen's efforts, we may be justified in expressing the opinion that no very beneficial or profitable results are to be looked for, and that the manufacture of flax, as at present conducted, will not be thereby in the least degree affected.

After the flax has been "retted," there still remain, in order to bring it into the fibrous state, two operations to be performed, termed "breaking" and "scutching." In order the more perfectly to perform the first of these, the bunches of flax must be brought to a suitable degree of dryness and crispness, as the object of crushing and breaking the "boon" into short lengths is thus more completely attained, and the subsequent separation of the fragments from the fibre facilitated. The ordinary and primitive hand machine is extremely simple, but not so effective as that now generally in use, which consists of a series of pairs of fluted rollers, the rollers of each pair being placed vertically to one another. These rollers are of iron, about two feet long and one foot diameter, and are horizontally placed nearly to touch each other; each succeeding pair, from that end of the machine where the flax enters, is made with somewhat finer flutes than the preceding one, and revolves at a somewhat slower speed, in order that the "boon" may be more effectually broken. Convenient-sized handfuls of flax are placed upon a board in front of the first pair of rollers, (great care still being taken to keep the wool ends level,) and are pushed endways into the bite, by which means they are conducted to the next pair, and so on till they finally emerge on to an inclined plank behind the last pair of rollers, from whence they are collected and arranged by a second attendant, and delivered to the scutcher. The scutching is performed, both by hand and by machinery, by beating the stricks in the direction of their length, so as to divest the fibres of all their extraneous matter. By hand, this operation is performed by grasping convenient portions in the left hand near the middle, and passing them into a transversal slit cut in an upright board; the flax is struck repeated blows with the edge of a flat piece of wood, formed something like a sword, being turned from time to time during the operation, and when one end is sufficiently cleaned, the ends are changed. By this method, however, a man cannot clean more than five to seven pounds per day; therefore the following machine is preferable, as by its assistance four or five times the work can be accomplished in the same time, and by an inferior class of work-people. This machine consists of a number of circular discs, upon each of which are fixed the sword or scutching blades, the slitted boards being still retained to support the flax, as well as to protect the workman's hand. It is better to employ three discs to work together, following each other, by which means the tow can be sorted into three different qualities by the machine itself, and the position of the blades can thus be varied so as to act in different ways upon the strick. After being thus scutched, the flax is sorted and tied up in bundles, in which state it is ready for the spinner's use.

THE CULTURE OF VEGETABLES AS FARM PRODUCTS.

BY JOHN W. PROCTOR, DANVERS, MASS.

Grass, grain and vegetables are the staple products of the farms of New England. The culture of vegetables includes all that class of plants growing annually, such as beets, carrots, parsnips, turnips, &c., which are chiefly used for the feeding of stock. Experience in the growth of these has shown a much more valuable produce than can be obtained from grass or grain. Rarely will the gross value of an acre of grass or grain exceed the sum of fifty dollars: when the nett proceeds of an acre, of vegetables, after deducting all expenses, often amounts to one hundred dollars. The growing of vegetables has greatly increased within the last thirty years, and is destined to increase further, as their culture and comparative value is better understood. It is not my purpose to go fully into this culture, but simply to notice such facts as have come under my own observation, and such as have a tendency to show the benefits to be derived from their culture.

The carrot is very generally cultivated, though not in large quantities. Rarely do the fields of carrots exceed one acre; they are generally less. Twenty or more tons are grown to the acre, when the land is properly prepared. After they have been twice hoed and weeded, their tops spread and cover the ground, so that weeds find little opportunity to grow. They are generally sowed in rows, about fourteen inches apart, and thinned out, so as to leave the plants four or five inches apart. When thus arranged in a good soil, and well prepared, the roots will so expand as to touch each other, and yield nearly three plants to each square foot of land, or thirty tons to the acre. I have known thirty-four or thirty-six tons to the acre to be produced in the county of Essex, Massachusetts. Col. Pickering says: "I am inclined to think a preferable mode would be to sow the seeds in double rows, about ten inches apart, with intervals of three feet between the double rows. In this case a deep furrow being opened by the plow, the manure should be regularly thrown into it, and covered by four back furrows, so forming a ridge over the manure; and the ridge being laid level, by a light harrow or roller, will then be ready to receive the seed."

The short, chunky, yellow carrot is the kind generally preferred, both for quantity and quality, and because it is more readily harvested. Carrots are used for feeding horses, cows, and every species of stock, and generally estimated, per hundred pounds, about half the value of English hay. The present season they sell readily at from nine to twelve dollars per ton—hay selling at twenty-four dollars. Carrots are considered a good preparative of the ground for other crops, particularly the onion. In some instances, carrots are grown in intermediate rows, between the rows of onions, and then fair crops of both are obtained from the ground at the same time, but we do not believe such a mode of cultivation desirable.

The Beet, in its several varieties of mangel-wurtzel, sugar-beet, and blood-beet, is much praised, and often recommended as a valuable esculent for the support of stock. Mr. Colman, in his European Agriculture, vol. II., p. 503, so speaks of it. Occasionally large crops, amounting to thirty tons to the acre, have been obtained. Still, for some cause or other, it is not extensively cultivated. Those who have grown them a few years are apt to discontinue the cultivation. That the beet is one of the most nutritive and palatable of vegetables cannot be denied. Accurate experiments, continued for a series of weeks, have demonstrated that cattle fed on beets will gain twice as much as when fed on the same quantity of turnips. Beets will not do well, year after year, on the same soil; and no crop, to my knowledge, is favored by the growth of the beet. It may be considered a great exhauster of the nutritive qualities of the soil. It demands deep culture, and liberal manuring.

The turnip, with many, is the "crop of crops"—the one thing needful on the farm. In England, it appears to be an almost indispensable part of their cultivation. Such has been the impression of citizens of New England, who have visited that country; such was the impression of the farmer of Marshfield, on his return from it. I remember to have heard him dilate on the turnip-culture of England, with eloquence most persuasive. His practice has corresponded with his professions. No one, who has visited his extensive fields at Marshfield, can have failed to notice his verdant acres of English turnips, growing in neatly arranged rows, and yielding a dozen or more tons to the acre, even on that shallow soil. How much of a dressing from the sea-shore had been applied, I will not say, I think it must have been liberal.

The ruta-baga, or Swedish turnip, is the variety that finds most favor in this vicinity. It is often grown in great abundance, with less expense than most other roots. This, like every other variety of turnip, is exposed to the ravages of insects, which materially lessens the crop. A small black fly, and in dry seasons, plant lice, are often extremely annoying to the culture of the turnip. It is not easy to find any crop that will not have some items on both sides of the account, when fairly stated. On the whole, it is believed that the culture of the turnip, in its several varieties, is destined to be an essential part of New England husbandry; and where better understood, to be more admired. The labor and expense of growing turnips is much less than other vegetables. Accurate estimates, by Mr. Brewer, of Springfield, Mass., the last season, show the costs of turnips, to be only one-third that of carrots, and carrots can be grown quite as cheap as beets, taking several years together.

The parsnip is a highly nutritious vegetable; readily grown, and an abundant producer. I have known square rods of this vegetable as productive as any other. Why it is not more generally cultivated, I cannot explain. Mr. Colman says he has looked in vain for it, among the English farmers, but understands it to be grown in abundance in some of the islands adjacent to England. That it may be grown with good success, in deep, rich soil, I cannot doubt; and that it is worthy the attention of cultivators, I have great confidence.

For productive value, as a farm crop, no vegetable within my knowledge can be compared with the Onion. This has been treated so fully, in an essay published in 1845, that little can now be said respecting it. Still, as what was then said, has to some seemed almost incredible, it may be useful to re-affirm what is certainly known from long and continued observation. The culture of the onion may be continued on the same ground for an indefinite length of time, with proper attention to pulverization of the soil, and manuring. It is a mistaken idea to suppose' because the bulb of the onion grows on the surface, that the soil does not need stirring beneath. Any one, who will take the trouble to examine, will find the tender fibres of the plant extending to the depth of twelve inches, at least, where the ground has been properly prepared. It is one of those crops, that in a peculiar manner, reward diligenee and care in its culture. The great secret of the success, in this culture, in the Eastern part of Massachusetts—where five, six, seven, and even eight hundred bushels to the acre are raised—is to be found almost entirely in the care applied, and not in any peculiar quality of the soil. Any land that will grow Indian corn, with proper management, will grow onions. In many places, it is thought that onions cannot be grown on their soil, and accordingly their supplies are procured from abroad. Hundreds, I may say thousands, of bushels are sent annually from this county to Vermont. I have known one hundred thousand barrels of this vegetable to be grown in a single year, at the town of Danvers, in which I reside; occasionally the crop is cut off by insects.

ON THE BLIGHT AND CULTURE OF THE POTATOE.

BY JOHN TOWNLEY, MOUNDVILLE, MARQUETTE CO., WIS.

A celebrated French naturalist, whose vanity kept pace with his acquirements desired to have inscribed on his tomb, "a genius equal to the majesty of nature," but, as was well said, a blade of grass was sufficient to confound his pretensions.

Great undoubtedly is the progress made in science and art during the present century: "we travel by vapor, correspond by lightning, and paint with the sun; yet amid all our boasted achievements, now and again circumstances arise as if to remind us of the still limited extent of our intellectual vision, that we yet see as through a glass darkly. We have witnessed, for instance, the potatoe plant suddenly stricken with disease; the leaves prematurely shrivelled and died; the food of the people perished. The mysterious visitation formed a prominent topic in speeches from thrones—in debates of legislators, and in leaders of newspapers. Essays and treatises, almost without number, were written on the subject, and when we call to mind the various conjectures which have been hazarded; the explanations which have been advanced to account for the malady, surely there is cause for humiliation. In no country was greater excitement caused by the disease than in Britain; the loss of the crop there in one season was of the estimated value of upwards of $50,000,000, and hundreds of human beings who had subsisted chiefly on potatoes were hurried to premature graves. The Government was necessarily alarmed and perplexed at the appearance of so formidable an evil. What can be the cause of it? How long is it likely to continue? Can we by any means subdue or prevent it? were their anxious inquiries. Unable to solve these questions themselves, they appointed a Royal Commission to inquire into the matter. Grave savans, botanists, chemists, doctors of philosophy, proceed to Ireland; they inquire into the condition of the potatoe in the field; select and take some specimens; these were examined with the microscope; probed with the dissecting knife; dried in water baths; treated with reagents; burned in crucibles; their very dust was analysed; finally the Doctors compared notes; the mountain brought forth its mouse; they pronounced the disease to be temporary, arising chiefly from cold, cloudy, wet weather. The sagacious Sir Robert Peel, however, who was then at the helm of affairs, had obviously little faith in their conclusions; he manfully avowed in his place in parliament his conviction that the disease was not likely to be transitory in its duration—that the people must have bread—the corn laws must be abolished.

The Royal Agricultural Society of England offered premiums for the discovery of the cause of the disease and its remedy, and knowing how much misery had then been produced, and believing as I did most firmly that the disease was not of a temporary character, nor yet owing solely or even chiefly to anything peculiar in the weather, and fearing that the Agricultural Society should coincide with the views of the Royal Commission, I had the temerity to write to the Council of the Society on the subject, not with a view to compete for their premiums, as I told them knowing that I was precluded by one condition, but trusting the facts I had to communicate might prove useful to them in forming their decision. I quoted authorities, proving:

1st. That the potatoe was formerly considered the palladium against famine, producing with certainty tolerable crops in adverse seasons when most other crops were deficient, and that the failure had occurred in a year when all other crops, wheat perhaps excepted, were abundant.

2d. That a moist season, such a one as suited the oat crop, had hitherto been found most favorable to the growth of the potatoe, and the oat crop of 1845 was one of the most abundant ever reaped in the country.

3d. That a reference to meteorörological tables and to agricultural reports, proved that the summer of 1829 in England was so cold, nearly twice as wet, more cloudy, and much more unfavorable to vegetation generally, than the summer of 1845, yet no such disease of the potatoe was then developed.

4th. That the disease did not appear simultaneously throughout the country, like the diseases of animals, arising from a peculiar state of the weather, but like the epidemic diseases of animals, it commenced on its first appearance, at a certain point and travelled.

5th. That the disease was experienced in Kent in the autumn of the fine dry summer of 1844; and nearly destroyed the whole crop in a part of the United States, in the midst of an intense and long-continued drought.

6th. That it had been experienced in St. Helena, an island within the tropics, five or six years, and in North America three or four years in succession; I inquired if it was proved, or could be considered probable, that precisely the same adverse weather had been experienced in so many different countries so far apart, and this for the first time during the two centuries, the plant had been in cultivation.

Burns sings "facts are chiels that winna ding and dare na be disputed." These however were of no avail. The Royal Agricultural Society endorsed the opinion of the Royal Commission, the malady was the result of the cloudy and wet weather of the summer of 1845; but in the following season, however, which was comparatively bright, the disease was again developed; every year, indeed, from its first introduction, it has been experienced more or less, and in the last season, as I learn from the press, and from private sources, it has been as virulent as ever in England.

Some have supposed that frost was the cause of the disease, as if it had become icy cold in so many countries, especially in St. Helena and Madeira. Thunder and lightning have been charged with this grave offence, as if there had been no thunder for 200 years before. Guano was condemned by many, as though the disease had only appeared where guano was applied. Telegraph wires were shrewdly suspected of having something to do with the mischief—a plausible explanation, seeing that the appearance of the wires and the disease were nearly contemporaneous. With many, insects were considered to be the cause. A doctor detected some aphides peculiar to the turnip, strolling over a potatoe leaf, they tasted here and sipped there, but did not, as he remarked, sit down quietly to their victuals, as when on the turnip plant. He stated that they evidently preferred the turnip to the potatoe, said they had the power of destroying both plants; and yet, in 1845, when the potatoe was first extensively blighted, the turnip crop was so abundant and excellent generally, that in many instances, turnips had to be sliced and put upon the land as manure, for the want of stock to consume them; yet despite of this important fact, a costly volume was published, to make us believe that the turnip aphis was the cause of the potatoe blight.

There was one explanation, however, advanced on the first outbreak of the malady in Europe, which carried conviction to my mind, that the immediate or exciting cause of the disease was discovered beyond boubt, and I will briefly explain the facts, which I consider conclusive on that point.

The disease was attributed by the Rev. M. J. Berkeley of England, Prof. Morren of Belgium, and I think M. Payen of France, to the attack of a minute parasitic fungus, *Botrytis infestans*. Before I proceed farther it may be well to explain the habits of fungi, and how they injure plants. Some species flourish on decaying matter and hasten its decay. The blue mould observed in stale bread affords a familiar instance. Others spring from the living tissue of plants and destroy it. Of the parasitic tribe, the rust and smut of wheat are well known examples. The Ruta-baga, if grown on a dry soil in this climate, appears liable to mildew. The lower leaves may be seen to shrivel prematurely and die, and this, as I have observed, may take place repeatedly, so that the leaves instead of springing nearly direct from the crown of the root, are elevated on a short stalk, and these roots are not unfrequently hollow and decaying.

The way fungi effect the destruction of plants is this: the substance of a plant is composed of minute cells and vessels—cellular and vascular tissue. Some contain air, some convey the crude sap, and others are depositories in which the elaborated products of the plant are stored up. While the plant is living and in health the varied contents of the tissue are under the control of vitality, but when attacked by a fungus the cells are ruptured by its mycelium or spawn, the contents are mixed together, released from the controlling power of vitality, and become subject to the laws of chemical affinity; hence, putrefaction and death of the part attacked ensues. Most will have observed white threads or filaments running through decaying horse manure, this is the plant of some fungus, suppose a mushroom, the mushroom which rises to the surface is the fructification, the reproductive part of the plant which contains bodies analgous to the seeds of plants of higher organism. When first the potatoe plants are attacked by the parasite, small brown blotches may be noticed on the leaves, generally towards the edge; if these are carefully observed they will be found to increase gradually in size, and on a moist dewy morning, or in damp weather, there may be perceived just outside the margin of the blotch on the underside of the leaf, a greyish appearance, this is caused by the fructification of the parasite. It commences at a poiut, and its spawn spreads like fire in nitrous paper. So exceedingly small is the plant that with the aid of a good lens I am not able to see the fructification distinctly, but when examined with the higher powers of the compound microscope it is a beautiful object, the fructification having something of the appearance of bunches of grapes—hence the generic name Botrytis.

In an inquiry like this, it is a matter of some consequence to know the qualifications of the men who decided that a fungus is the cause of the potatoe blight. Were they qualified by their previous knowledge and by their opportunities to be competent observers?

The Commissioners appointed to inquire into the matter by Sir Robert Peel, of whom the celebrated botanist, Prof. Lindley, was one, acknowledged that Mr. Berkeley was eminent above all other naturalists of Britain for his knowledge of the habits of fungi. When the disease appeared in England in 1845, Mr. Berkeley was residing in the country in the midst of potatoe fields. On the 23rd of August Dr. Lindley published an article, in which he hastily and most unfortunately ascribed the rot to atmospheric influences, to the cold, cloudy, and wet nature of the season. On the 26th of August, Mr. Berkeley received from his friend, Dr. Montague, of Paris, some potatoe leaves infested with the parasite, and at that date Mr. Berkeley wrote to Dr. Lindley apprising him of this, and said, that he had inquired in every direction and could hear of no tidings of the disease in his neighborhood, and that his own crops were never more abundant or finer. A few days afterwards the disease reached Northamptonshire, and Mr. Berkeley, like Prof. Morren, followed its progress in various potatoe fields. The result of his observations at that time and afterwards may be briefly summed up. He found that the same fungus which had been forwarded to him by Dr. Montague, from France, which Prof. Morren found preying upon the plants in Belgium, and which was a species new to all of them, in every case preceded the work of destruction. It attacked the leaves when green, or yellowish green, and caused them to decay. The attack on the leaves preceded the putrefaction of the stems. The partial decay of the stems preceded the decay of the tubers, and those tubers nearest the stem or surface of the soil were generally first tainted; and the same mould which springs from the substance of the leaves uniformly bursts forth from the tubors exactly at the spot where the decay originates. That the mould proceeds from within, Mr. Berkeley can state from personal observation, and he believes it to be a fact that it could not establish itself on a decayed substance. The parasitical fungus, *botrytis infestans*, is, therefore, to my mind, most unquestionably the immediate cause of the potatoe blight.—It is well known to be a power perfectly adequate to accomplish the effect under certain conditions.

It may be well to notice the chief objections which have been urged against this explanation. Many assert that fungi have not the power to destroy plants: and even well-informed men, certainly not botanists, but men having some pretensions to scientific knowledge, have said that fungi prey upon decaying matter only, therefore, it is to them incomprehensible how they could possibly cause the disease. But instead of proving the fungal theory to be erroneous by such statements, they only proved their own ignorance of facts of every-day occurrence, for no truth can be better established, than that some species of fungi do attack plants before there has been any visible appearance of decay, that they spring from the living tissue and destroy it.

Others have said that in order to have produced the disease of 1845, the fungus must have attacked every plant, and some fields in an unhealthy condition were examined, without finding the least trace of it. I have noticed fields of potatoes in a diseased state which was obviously not due to the fungus; the symptoms were altogether different. But then, I have examined field after field for miles, attacked by the mildew; I have seen the parasite commencing its ravages; I have seen crops, which at the first glance, presented an uniform healthy appearance, when the lower leaves on examination were found to be attacked by the parasite. And because, I have met with instances of disease not apparently caused by the fungus, am I then to conclude, despite the evidence of my own senses, and of the testimony of observers like Berkeley and Morren, that the fungus, *botrytis infestans*, is not the immediate cause of the blight? The only conclusion that I feel justified in arriving at, is, that another disease co-exists with that of the blight. The potatoe has, indeed, been affected by several distinct diseases of late years, and it is owing to the want of a knowledge of this, and to the vain attempt to find one cause, which will account for all the forms of disease that have tended so much to perplex the question. If cholera was decimating the population of a country, and a man were to find in certain localities, cases of typhus and scarlatina, would it be considered a valid objection that cholera could not be the cause of the epidemic, or excess of mortality, because some were affected with other diseases.

The English Commissioners doubted whether fungi were the cause of the disease. The theory did not appear to them well established; not because *botrytis infestans* is a species of fungus which preys exclusively on decaying matter, and not a parasite which produces decay; but, said they, "if fungi were the original cause of the disease, it is difficult to conceive why fields of potatoes, placed very near each other, should be differently affected, or why certain varieties of the plant should be much less injured than others." But what reasoning is this? Surely it did not occur to them that this objection might be urged with equal force against their own explanation of adverse weather. Might we not as reasonably object that fungi could not be the cause of a patch of mildewed wheat because the whole field was not attacked. And the fact that the varieties which the Commissioners said had offered the greatest resistance to the disease were previously known to possess greater constitutional vigor than those which signally failed, was sufficient to account for the different powers of the parasite over these varieties.

The Commissioners were also "unable to reconcile with the theory of the disease being caused by fungi, the remarkable fact that in its present form it is certainly of modern origin. We must assume the *botrytis* to have been co-existent with the potatoe itself, and therefore we must conclude that some recent causes must have come into operation favorable to its increase to the present alarming degree." But why these "ifs and doubts," upon a point which is capable of being decided by direct observation? If the fungus be a true parasite and not a species which preys on decaying matter only, what does it matter whether we can understand or not why different fields or varieties of potatoes should be differently affected, or why the disease had not before been developed? If the foundation be secure—if the main fact be placed beyond dispute, which is the first thing to be considered, we may then be assured that all our doubts admit of being satisfactorily explained, and our next endeavors should be to find these explanations; to discover, if possible, what are the causes which have recently come into operation, favorable to the increase of the parasite to the present alarming degree, and not to doubt the habits and power of the parasite, simply because we cannot immediately find these explanations.

As if, however, no longer to leave any room for doubt or cavil on this point, Mr. Berkeley, in his elaborate treatise published in the London Horticultural Society's Transactions for January, 1846, said in language as plain and decisive as it is possible for language to be, "The decay is the consequence of the presence of the mould, and not the mould of the decay. It is not the habit of the allied species to prey on decaying or decayed matter, but to produce decay; a fact which is of the first importance. Though so many other species have this habit, these have not." Again, "I do not know of any single instance in which any of the nearly allied species have been found in any other situation than growing from the tissues of plants. Were this ever the case, they could not have been overlooked, as their pores are so much larger than any other species of the genus. The species are, in fact, as peculiar to the living tissues of plants as are the several species of *Puccinia* and *Uredo*, which could not exist, or at any rate be perfected, elsewhere.

My task now is to explain, if possible, why the disease is certainly of modern origin, and what causes have come into operation favorable to the increase of the parasite to the present alarming degree.

Different plants, as well as different animals, have their peculiar parasites. Some parasitical fungi will indeed prey upon many different plants, but the attack of a species is generally confined to a certain natural order or family of plants, or to a genus, or to two or three species of a genus, whilst some, as with parasites in the animal kingdom, exist on a particular part only of one species. The parasitical fungus which attacks and mildews wheat in unfavorable situations or seasons will not live upon turnips. That which infests the turnip will seize upon the cabbage, they being nearly allied plants; but it will not touch the potatoe, yet the parasites of the turnip and the potatoe are nearly allied.

For a plant to be affected by mildew two things then are requisite: the presence of its peculiar parasite and the conditions favorable to the growth of fungi.

As the potatoe is an exotic, is it not probable that tubers of the plant may have been originally introduced into Europe without its parasite. In the same way it may have been carried by Europeans, to other countries, of which it is not a native, and have, consequently, until lately, remained free from the parasite in those countries also.

M. Boussingault stated to the Academy of Sciences of Paris, on the authority of M. Joachim Acosta, that the malady is well known, in rainy years, at Bogota, where the Indians live almost entirely on potatoes

The potatoe is said to grow wild on the table land of New Granada, and M. Acosta believes that the disease has always been familiar to the Indians. It is probable, therefore, that the parasite has co-existed with the potatoe in its native country. By a note to Mr. Berkeley's treatise, I learn that Professor Morren considers that the fungus is of American origin. Mr. Berkeley also evidently inclines to the opinion, that it is a recent introduction. Next to South America, the disease seems to have been first developed in St. Helena. In the Gardener's Chronicle, for January 22, 1842, and again in June 1, 1844, this disease of the potatoe, from the symptoms mentioned, is evidently referred to, the rot had been experienced in that island several years previous to 1842, causing, as was said, great misery and distress to the inhabitants, potatoes being their chief article of produce. St. Helena is in about the same latitude as Peru, the native country of the potatoe, and nearer than any other place, in which the disease has been subsequently experienced; and when we consider how exceedingly minute and buoyant must be the seeds of this fungus, when the plant itself is so small as scarcely to be visible to the naked eye, is it not probable that some may have been conveyed by the wind to St. Helena. Thence, it seems to have been carried to Madeira and North America, and so has gradually progressed from country to country. It reached England late in the fall of 1844, and was confined chiefly to Kent. There the premature decay of the foliage was observed, and a large proportion of the tubers decayed. The blight was first noticed in England in 1845, in the same locality where it was observed in the autumn of the preceding year. Thence it travelled through England and Ireland, halting mid-way in Scotland; so that the crops in the extreme northern parts of Scotland were free from the pest. In 1846, it proceeded throughout the Highlands of Scotland, and on to the Shetland, Zetland, and Feroe islands.

In some instances the disease seems to have been communicated from one place to another by means of seed-tubers. A fact which has proved fatal to many theories, and which seems to indicate that the chief cause of the disease did not previously exist in these places, but that it was inherent in the seed-tubers. At Bermuda, Oporto, the Cape of Good Hope, and in Poland, the crops which were observed to be first or exclusively attacked were those raised from seed-tubers obtained from America or England. Mr. Berkeley has observed young plants of the fungus springing from within the cells of a potatoe. The germs of these could not have immediately vegetated on entering the plants, but were probably carried by the elaborated sap of the leaves and deposited along with it in the cellular tissue. Mr. Berkeley states that, "it seems to him most certain, from observations on those fungi which grow from the tissues of plants, that minute particles, too small to be distinguished by the highest powers of the microscope, must be carried about with the juices, and when fitting circumstances concur, proceed to act upon the tissue with which they are in contact."

The disease was observed to progress on the Continent of Europe, as in Britain; it was said in a letter from Bologna, that the geographical limits of the disease, as well as its intensity, had extended in that part of the world very far beyond what they were the previous year. Another most important fact is, that the fungus, which is the cause of the blight, is a species new to cryptogamic botanists. If it had been co-existent with the potatoe in these parts, it is hardly probable that the parasite of so common a plant should have escaped the attention of the botanists of Europe, or that it should not have attacked the potatoe partially in former years, instead of making such an universal onslaught as of late in very different seasons and situations; for whether the conditions favorable to the growth and increase of parasitic fungi, be atmospheric, or an unhealthy condition of the larger plant, we have had seasons when fungi have prevailed to a considerable extent on other plants, and varieties of the potatoe have certainly been in a very unhealthy condition previous to the appearance of the disease, and yet it has been observed to be a plant peculiarly exempt from blights and mildews. It seems, therefore, probable, if not certain, that *botrytis infestans* is a recent introduction, and if so, this affords a very satisfactory explanation of the remarkable fact that the disease is certainly of modern origin.

Our next inquiry is a most important one. What are the conditions required for the growth and increase of parasitical fungi, and which have led to such an extensive and unprecedented attack, on one plant only, in so many different countries, under so many different circumstances, and in some instances during several successive years? Are they some electrical or other peculiar unknown atmospheric influences, as stated by Mr. Berkeley, or chiefly an unhealthy condition of the larger plant, as I have ventured to suggest.

Fungi have evidently not the power to destroy healthy vegetation, if they had, the superior plants on which they prey would shortly be swept from the face of the earth. They are essentially scavenger plants. The two tribes into which they may be divided have separate tasks assigned to them in the grand scheme of creation. The office of one is obviously to hasten the decay of matter already decaying. The office of the other, I believe is to hasten the death of that which is unhealthy. Those which flourish on dead organic matter appear only when decay has commenced, a fact well known to most. "Fungi," says Mr. Solly, "are only developed in those solutions which are in that state of putrefaction favorable to their growth; moreover they do not appear till the solution has acquired that state." There must, I believe, be unhealthy action, possibly some slight chemical change in the fluids of superior plants before parasitic fungi can successfully attack and destroy them. Is this view of the case then supported by facts? Is the state of the superior plant consequent on certain atmospheric or other influences, the condition requisite for the attack of the parasite, or does the growth of the parasite depend on certain atmospheric conditions only? There can be no doubt whatever that the state of the weather has considerable influence on the development and increase of parasitic fungi in ordinary cases. In moist dull seasons, crops are observed to be always more or less affected by mildew. Any sudden check in the progress of vegetation, such as is caused when hot sunny weather is succeeded by calm, dull, foggy days, or by a sudden transition from weather favorable to rapid growth to weather cold and wet, is generally considered to be the precursor of blight and favorable to the growth of fungi.

Now, circumstances like these would exercise an injurious influence on the health of the larger plants; it is therefore doubtful whether it is not the state of the plant attacked rather than any peculiar atmospheric condition which favors the growth of the parasite. Other facts seem to indicate very clearly that circumstances of soil, situation, manure, &c., predispose plants to an attack of fungi independent of atmospheric influences. Almost all our cultivated crops are known to have their peculiar parasites. "In favorable seasons," Mr. Berkeley observes, "the fungi which infest grain crops are not developed; in unfavorable seasons they spread like wild-fire." Since the appearance of the potatoe blight have the seasons been favorable to the growth of fungi or otherwise? Were grain and other field crops universally, or to any considerable or unusual extent attacked? It is well known this has not been the case. Then comes the puzzling question—if this universal attack on the potatoe be solely the result of peculiar atmospheric conditions, favorable to the growth and increase of parasitic fungi, how is it that there has not been a similar extensive attack on other species of plants also? The alternatives presented by this question are these:—either the parasite of the potatoe requires for its rapid development certain atmospheric conditions, differing from those required by the parasites of other plants, or there must be some inherent predisposition in the potatoe plant which has led to this extensive attack of its parasite, and which is not the immediate and exclusive result of atmospheric influences. Want of space will not allow me to enter more fully into this branch of the inquiry. I sent a paper on the growth of fungi to the lamented A. J. Downing, which appeared in the Horticulturist for July 1851, and if any one should desire to pursue the inquiry further I would respectfully refer him to it. The question is one of considerable importance to farmers and gardeners, and it has received little attention hitherto.

Is there any evidence that potatoes generally were not in a healthy condition, previous to the appearance of the present malady? It has been said there are no data on which to found a conclusion of this nature. At the meeting of an Association for the Advancement of Science, it was said, "debility was supposed to exist," but no proof was given of the existence of debility, and what, it was triumphantly asked "is the proof of debility in a potatoe?" This betrays a lamentable want of knowledge of the previous history of the potatoe; and it is requisite that a man should know that history before he can be qualified to see the question in all its bearings, give due weight to facts, or arrive at sound conclusions. Formerly the potatoe was considered the most certain of all crops, but it has gradually become, of all crops, one of the most precarious and troublesome. Formerly the tubers would bear almost any treatment without injury; as an old writer observed, it was "a plant, if possible, more tenacious of life than couch grass." Of late years, and before the appearance of the blight, innumerable consultations have been held, experiments made, and essays published, with a view to discover, if possible, how best the tubers can be preserved from premature decay. And yet, we are asked "where are the proofs of debility?"

I spent a week or two in the Library of the British Museum hunting through piles of musty old volumes on farming and gardening for information respecting the diseases of the potatoe, and more especially whether the blight had ever been experienced before. And I can prove by, I believe, most satisfactory evidence, that the plant, considered as a species, has progressively deteriorated. For a long time it appears to have continued free from any observable disease; and the first mild form of disease "curl," and the more recent and fatal "dry rot," I found could not be attributed solely to any peculiarity of soil, season, or mode of culture, but were peculiar to, and therefore inherent in, certain varieties for the time being. And not only are there abundant proofs that the potatoe generally is in a degenerate condition, but there is evidence that varieties have been mostly injured by the mildew in proportion to the symptoms of debility which they had previously exhibited, whilst some recently obtained from seeds, more especially in Germany and Prussia, are said to have remained entirely unharmed, though growing in the vicinity of others which were affected. If the facts be so, can any thing be more obvious than that a most certain means of preventing or mitigating the effects of the blight, is by increasing the constitutional vigor and hardiness of our potatoe crops. How then is this to be accomplished? We could answer this question with most confidence if we knew the precise causes which have led to the deterioration of the potatoe. Over-manuring, cutting the tubers into sets, planting the sets on raw manure, imperfect storing of the seed-tubers during winter, have each been supposed to be the cause of degeneracy. These, with many other causes, may have contributed to the bad health of varieties, and may thus have hastened the deterioration of the plant as a species. The present condition of the potatoe is probably the accumulative result of not one, but several adverse influences operating through successive generations.

The degeneracy of the potatoe plant is, I believe, owing chiefly to the mode in which it is usually propagated. Plants propagated by extension, that is, by buds, cuttings, layers or roots, are but the extension of an individual, possessing the same constitution, properties and tendencies, and are not a renewal or reproduction as by seed. A variety so propagated has a determinate existence, there comes a time sooner or later, according to the original vigor of the parent plant, and to the treatment its progeny receives, when it will become comparatively worthless, and cease to deserve the attention of the planter. Andrew Knight, who first established this fact, by numerous experiments on various plants, continued through many successive years, said, in the last letter he wrote on the potatoe, "that varieties, which have been long cultivated, cease to be equally productive, is placed beyond the reach of controversy. I have, in several instances, tried to renovate the vigor of old and excellent, nearly expended varieties, by change of soil and mode of culture; but I never, in any degree, succeeded, all become unproductive and worthless." Dr. Lindley, also, in speaking of the potatoe, says, "it is certain that the productive power of a given variety of the potatoe, is in proportion to its youth, and that all varieties cease, after a few years, to be as productive as they once were. When Mr. Knight's seedlings were originally tried, they yielded, in one case, at the rate of sixty-eight and seventy for one; no such crops can now be obtained from them." This hypothesis, till within the last few years, made but little progress, and, I believe, it is owing to the want of a knowledge of, or faith in, the truth of this law, and to the consequent neglect of frequently renewing the vigor of the potatoe, by raising a succession of seedling plants, from seeds saved from vigorous and healthy varieties, that the degeneracy of the potatoe considered in the mass, or as a species, is chiefly due.

All other agricultural plants have progressively improved, the potatoe alone has progressively deteriorated. The former are propagated exclusively by seeds, the latter chiefly by divisions of the tuber; and this difference in the mode of propagation furnishes a key to the true explanation of the cause of the bad health of the potatoe, as compared with other crops. There is no other instance of an entire species of plant having degenerated like the potatoe. The varieties of the ranunculus and anemone, which are propagated by their tubers, are equally short-lived plants, but great attention has been paid to raising new varieties from seeds. To raise new sorts of these flowers is a most bewitching, and, moreover, a profitable pursuit, and florists know well, that in order to reach nearer to perfection, they must start from the most perfect flowers they most recently obtained. But there have been no inducements for continued efforts to improve the potatoe, by raising new varieties from seeds year after year. Other plants had far higher attractions for those who followed the pursuit as an amusement: and as a commercial speculation, there was little prospect, indeed, of its paying; hence, we have been trying over and over again, with a marvellous perversity, to make individual plants live for ever, which nature intended should only live for a time, and then from parents feeble or old, we have vainly expected offspring hardy and strong; herein we have violated the laws of nature; by these practices we have gradually reduced the constitution of successive generations of the potatoe; and we have consequently gradually increased the activity and power of those influences provided by nature, to rid the earth of feebleness, and to admonish and correct those who act in opposition to her immutable laws.

If the foregoing premises are well founded, we may infer that the extent or virulence of the disease in future, will depend partly upon the nature of the season, partly on the adoption of various expedients known to be adverse to the growth of fungi, and chiefly on the progress which is made in regenerating the potatoe plant.

I propose to consider in the first place, how we should proceed in raising a succession of progressively hardier varieties from seed. Whenever potatoe seed is required, plants should invariably be grown especially for that purpose. A few middle sized tubers, of say about four, of the most healthy varieties we possess, should be selected for the seed-bearing plants; and as the autumn months are generally more favorable to the attack of parasitic fungi than midsummer, early and second early varieties should be preferred; because unless we had late varieties, which had been proved to be able to resist the disease, the chances would be greater of the plants being destroyed before they had perfected their seeds, than if early or second early varieties only were used. The plants must be grown from the first in the open ground, in a situation sheltered from strong winds, yet not confined or damp, but freely exposed to the sun. Enrich the soil with decayed leaves, or chopped grassy turf; on no consideration whatever apply liquid manure, or a heavy dressing of animal manure.

In favorable seasons most late varieties will produce a crop of berries as well as tubers. Intermediate varieties generally blossom, and sometimes bear a few berries; but the earliest sorts, owing to the early formation of tubers, seldom blossom, and very rarely ripen seeds. These will obviously require different treatment. In order to obtain seeds from the early varieties, we must adopt the practice of Mr. Knight, who found that if the plants are prevented from forming tubers, an abundance of blossoms and seeds will be the result.

Having made choice of a situation and manured the soil according to the foregoing directions, fix stakes in the ground about three feet apart, where each plant is to grow, then place a tuber on the newly dug soil, and in contact with the south side of a stake, cover the tuber by a mound of earth about five inches deep. Suffer only one stem to grow, and as it advances in growth, tie it to the stake to avoid accidents from the wind, &c. When the plant is about five inches high, wash away the mound of soil by a current of water, till the base of the stem is visible. The fibrous roots by which the plant is nourished will have made their way into the enriched soil below the tuber, these must be disturbed as little as possible; they may be readily distinguished from the runners which generate tubers, every one of which must be destroyed. The ptant will shortly make an effort to produce other runners, which must be again nipped off as soon as perceived; and the plant being thus foiled in its endeavors to propagate itself in this manner, will ultimately direct its energies to the production of blossoms and seeds.

I consider it advisable to fertilize the flowers of one variety with the pollen of another. Some facts seem to indicate that a result of this practice is a more vigorous seedling than could have been obtained from either of the plants without the crossing. Some who may be desirous of trying the method may not know much about the sexual organs of plants. To such the following instructions may be of use:

Take a full-blown potatoe flower; in the inside of it you will find six small upright bodies, five of which are alike; these are the stamens or male organs, which produce the yellow fertilizing dust called pollen. In the centre of the flower, and surrounded by the five stamens, is the pistil or female organ; this may be known by its light green color, and by its differing in shape from the stamens, or, by carefully tearing away the corolla or flower leaf and the stamens, the pistil may be still further distinguished by its being seated upon the miniature berry containing the embryo seeds.

To cross-fertilize, it is of course requisite that the parent plants should be in blossom at the same time. A flower intended for the female parent should not be suffered to perfect its pollen; to prevent this, it must be carefully opened just before it naturally expands, and the five stamens must be removed by a pair of small pointed scissors, taking great care to leave the pistil uninjured. When the flower has expanded gather perfect flowers of the variety intended for the male parent, and with a camel's hair pencil gently dust the pollen on the pistil of the flower you have previously deprived of stamens, or shake the pollen on to a sheet of writing paper, and so scatter it on the summit of the pistil. The best time for this operation is in the middle of a dry sunny day, and to avoid failure it should be repeated every favorable day till the flowers begin to fade; the petals of flowers having been observed to shrivel and fall soon after the seeds were fertilized, and to retain their petals for days longer if this had not taken place.

When about four berries are set on each plant, nip off the remainder of the flowers. At this stage of growth the plant will have completed its feeding organs, and a greater quantity of sap will probably be elaborated than is required for the support of the seeds, consequently one or two tubers may now be suffered to grow, or the plant will form them in the axels of the leaves higher up the stem. If the parasite should appear on the leaves of the seed-bearing plants, as soon as the spots are perceived, dust them with the flowers of sulphur on the underside of the leaves when moist. This may possibly destroy the fungus or otherwise stop its progress.

A Silesian agriculturist, who is reported to have aucceeded in regenerating the potatoe, takes the seeds from the berries in autumn. Zander, a Prussian, who has been equally successful, objects to this practice, and advises that the seeds should be preserved in the berries, in a dry place, secure from frost, till spring. Zander's plan may prove the best, especially, if the seeds were not thoroughly ripe when the berries were gathered. When the seeds are to be extracted, crush the berries with the hand, and if fresh, put them in a tub or other vessel; as soon as a slight fermentation is observed, wash the pulp in luke-warm water; pick out the seeds and wash them gently in one or two other waters, till they are perfectly clean and free from pulp; then scatter them on a sheet of paper to dry, when dry, place them loosely in small canvas bags; suspend the bags in a bed-room, or some equally temperate dry place, until the time of sowing. As soon as all danger from frost is passed, prepare the seed-bed; the previous year's onion-bed, or some plat equally well manured, and which has grown a crop, equally different from the potatoe, the preceding year, should be preferred. Sow the seeds thinly and shallow, in rows six inches apart; when the plants are four or five inches high, prepare the ground into which they are to be transplanted, apply a moderate dressing of charred vegetable matter, or well-rotted stable manure, broadcast. Remove the plants carefully, disturb the roots as little as possible, and select a dull moist day for transplanting. Let the rows be not less than two feet apart, and the plants eight inches from each other in the rows. To save after trouble, reject all plants which exhibit marked symptoms of constitutional weakness, and all which have soft prostrate stems. Carefully observe the remaining plants throughout their growth, in order that the healthiest and the best may be selected to be the parents of the seed-bearing plants in the following year. Those which exhibit the greatest hardiness, which suffer the least from adverse weather, &c., must be marked by labels; and, if, in addition to this indispensable property, any possess other good points, such as rather dwarf, stolet, rigid stems, good shaped tubers, and ripen somewhat early, a preference should be given to them. The tubers of the seedling plants must be carefully preserved during the winter. When the time for planting has again arrived, and the ground prepared, and the stakes fixed where the seed-bearing plants are to grow, select two or three of the largest tubers and plant them at once; and so proceed till the allotted space is occupied. These plants to be managed, in all respects, same as those of the preceding year. And when, by persevering in this process, the main object is attained, hardiness of constitution and freedom from disease, we may then more especially endeavor to obtain varieties uniting excellence of quality, and other desirable properties, with robust health. A careful and practised experimenter will, indeed, have an eye to this from the beginning. He will, at the outset, consider the various points which constitute perfection in the potatoe, and to this ideal standard he will constantly aim.

With a view to forward the young plants and to obtain large tubers from them in the first year, many will be induced to sow the seeds in a hot-bed; but as our chief aim is to increase the constitutional hardiness of the plant, this mode of raising the seedlings cannot be too strongly condemned. Sir Joseph Paxton, who is eminent as a gardener, as well as a designer of Crystal Palaces, says, "Seeds ripened or germinated in heat will never produce such hardy plants as those matured and vegetated in open air. This has been abundantly corroborated in practice, and proofs of its accuracy are constantly transpiring."

The experience of the Silesian Agriculturist, acquired in his endeavors to regenerate the potatoe, exactly coincide with Paxton's observations. "I have," said he, "made successful attempts to obtain already in the first year perfect potatoes by sowing the seeds in a hot-bed. I prefer, however, a regular biennial growth; if I reap a twelvemonth later I get a durable article, which answers all the expectations which may be formed, and is safe from the prevalent disease."

Some who have raised a few plants from seed, and found they were blighted, have hastily concluded that there is no hope in seedlings. I have contended from the first, that if I am right in my conclusion respecting the degeneracy of the plant as a species, it would not do to depend on the first or second year's seedlings, however healthy they might seem to be; as I said, in 1845, in a letter on the blight, in the London Morning Herald, "it is only by improved culture, judicious selection, and several successive generations that we can have any just grounds for hoping to restore the potatoe to its pristine state of vigor and health if it ever can be accomplished by this means with these plants." It is a fact observed in America and Europe, that some varieties offer much greater resistance to the disease than others; now, whether this is owing to a difference in constitutional vigor, or to some idiosyncracy of these varieties, how but by having recourse to seedlings, is their number to be increased, or how are they to be superseded when in the course of time their energy declines, or how can we be sure that others may not be obtained by careful and skilful management which will resist the disease better than any we now possess? In an article on the potatoe by Prof. Lindley, written before the appearance of the blight, he said, "finally let us point to the immense importance of renewing the vigour of potatoes, by raising new varieties from seed. This has been tried over and over again, and always with some advantage, sometimes with a great deal."

I may here state my conviction, that when the potatoe has been restored to the highest state of health it is capable of attaining, that specimens of the fungus may be found on plants in some situations, even in the most favorable seasons. I conceive it would be mere quackery to hold out any hope, that *botrytis infestans*, now that it has established itself in this country and Europe, will be entirely banished, when the general health of the potatoe plant has been restored. We can only infer what may be the future power of the parasite over the potatoe by the data afforded by other plants; and our knowledge of the causes which induce partial attacks of fungi on wheat, turnips, and even plants in a state of nature, forbid the hope that our potatoe crops will ever be entirely exempt from the pest. All that we are justified in expecting is this: that in the most unfavorable seasons we are likely to experience, there will be no such general attack as of late years, and that when local or transitory influences are sufficiently powerful to render certain plants unhealthy, and thus to favor the attack of the parasite, there will not be that rapid decomposition of the plants as now, but that the parasite will be confined chiefly to spots on the leaves. In ordinary seasons I anticipate the fungus will scarcely be noticed, and that it will cause no more apprehension for the safety of the potatoe crop, than the fungi which attack wheat and turnips now cause for the safety of those crops. It is essential that this should be distinctly understood and borne in mind; hasty and erroneous conclusions may thereby be prevented, as it is probable many seeming inconsistencies will be observed, which this knowledge alone will satisfactorily explain.

Our next consideration is, what expedients should now be resorted to in the general cultivation of the potatoe to enable our plants to offer the greatest resistance to the action of adverse influences and thereby mitigate the effects of the blight. We should in the first place select those varieties for cultivation which have been proved to be the most hardy and healthy, and therefore least affected by the disease. It may be well hereafter to grow potatoes specially for sets in order that we may have the most healthy and vigorous plants which the variety cultivated is capable of affording. A somewhat open airy situation should be selected for the seed-bed. If the land has been manured for the previous crop, and is in good condition, plant without manure. But if the land is not in good heart, then apply, broad-cast, a slight dressing of well-rotted stable manure, or guano, and where they are to be had, use in preference, charcoal dust, charred turf, or partially decayed leaves; the object being to promote a steady, healthy, and vigorous, but not over-luxuriant growth.—Plant the tubers whole, not less than six inches deep, and let the rows or hills be about two feet and a half apart. The same distance between the plants is of course not suitable for all varieties; this must be regulated by the planter's knowledge of the habits of the varieties he cultivates; the point he should aim at is, to have the whole of the ground covered by foliage during the bright days of summer, but so that the plants of one row shall not interfere with or shade those of another.

Plants grown for seed-tubers should never be suffered to blossom. If a plant produces many blossoms and seeds it will be at the expense of the tubers; that is, the sap which would be expended in support of the flowers and fruit, would contribute to the growth of the tubers if the flowers were destroyed. But that is not my reason for recommending this practice with plants grown specially for sets. Many facts observed in various kinds of plants, lead me to suspect that the production of seeds has a peculiarly exhausting effect on vitality, and I am much inclined to believe that if ever the experiment is tried, it will be found that a variety of the potatoe which bears seeds abundantly will maintain its health and vigor for a much longer period if the blossoms are annually destroyed, than if it is permitted to ripen its seeds each year.

Our next inquiry is, how and where the main crop should be planted—what soils, situations, and modes of culture are best calculated to mitigate the effects of the disease? Clays and heavy wet loams are known to be least favorable to the growth of the potatoe, and in these soils the disease seems to have been most virulent. But the evidence respecting all soils is very contradictory, and the difference in the results observed, was probably owing, in many instances, to a difference in situation, &c., rather than to any peculiar property of the soil.

That a given variety of potatoe may suffer more from the blight in one situation than another, is what might have been expected, from the known conditions which favor the growth and increase of parasitic fungi. Many have observed that the disease was first developed, or proved most destructive when potatoes were growing under precisely the same circumstances, which predispose wheat plants to the attack of mildew on damp, low-laying soils, where the air could not circulate freely. On land naturally rich, or highly manured, on the sites of dunghills, or on portions of fields where dung heaps had been laid, the plants have been very much affected. Light loams, in rather elevated or open situations, should therefore be selected for the potatoe crop, and much less than the usual quantity of manure should be applied, if it would not be much more advisable to manure the previous crop instead, where practicable. It is probable the disease may be influenced, to some extent, by the nature of the manure; gross animal manures, when applied in quantity, are well known to produce in plants a tendency to decay. On the other hand partially decayed leaves, or charred vegetable matter, are highly favorable to healthy vegetation. We may also, by other means, contribute to the health of our plants. I have observed, in many instances, potatoes have been grown in hills much too near each other. The climate of this section of the country is somewhat peculiar. In the earlier part of summer, we have usually much dry sunny weather, during this period the growth of the plants is slow, much of the ground remains uncovered by foliage and exposed to the sun; a great amount of heat necessarily accumulates in the soil. When rain falls, if the temperature continues high, the combined influence of the warmth and moisture of the soil and air, have a forcing effect on the potatoe plant, which causes the haulm to grow with excessive luxuriance, so that the foliage of the plants of one hill, soon interfere with that of another. Whenever this happens, the plants, instead of quietly attending to the formation of tubers, become engaged in a struggle with each other, fighting, as it were, for the precious light. The invariable result is, that all are more or less injured; these stems are drawn up, the sap has further to travel in its ascent and descent; many of the lower leaves become shaded, and, therefore, useless; the stems are also more brittle and liable to be laid, and the produce of plants so situated, whether they be potatoes or forest trees, will, invariably, be found deficient, as compared with crops grown at proper distance apart, and owing to the want of a free circulation of air around them, and the unhealthy condition, induced, they become a more easy prey to the parasite.

When I was a boy, I had observed that potatoe plants, with stout stems, had invariably the finest tubers, so, when walking round the garden with my grandfather, and seeing a plat of potatoes, with stems as tall as myself, I ventured to congratulate him on the large crop he was likely to obtain, when he puzzled me considerably by saying, that I was much mistaken, for they were all running to tops. How in the world the potatoes could run into the tops, I could not imagine; many a time since, I have heard this remark, and possibly there may be some now, who would be as much puzzled to account for it, as I was then. The explanation is this: The matter which constitutes the tubers of the potatoe, the roots of carrots and turnips, the seeds of grain, the fruit of our orchards, and the wood of trees, is elaborated or prepared in leaves, by the action of light. The fluid absorbed from soil by roots, ascends through the woody part of the stem, circulates through the upper surface of the leaves where it undergoes certain chemical changes, and then descends by the bark; and it is considered that the mature leaves only, and of those, such only as are not shaded by others, are efficient; hence the deficiency in produce, when the leaves of one plant shade those of another; and of the indifferent crop of tubers, compared with the growth of the stems, when the plants are so crowded, as to be drawn up, their stems laid prostrate, and much of the foliage rendered useless.

There are two or three other questions relating to the culture of the potatoe on which I may venture a few remarks, viz: What is the best mode of applyinging manure to the potatoe? Is it advantageous to pluck off the flowers? Should tubers intended for sets be thoroughly or partially ripened?

The usual mode of applying manure is to place it below the sets. Mr. Knight advised that it should be spread upon the soil and so plowed in. Doubtless this is the better practice and is gaining ground. A soil in a state of nature is of a nearly uniform character, but one soil differs from another in quality; and we may observe how wonderfully plants in a state of nature accommodate themselves to the circumstances in which they happen to be placed. If a seed germinates in a poor soil, the young plant may be seen acting as wisely as if it had reason or instinct to guide it; it does not aim at too much but fashions all its organs on a moderate scale. In a rich soil there is a corresponding increase in all parts of the plant. In both there is an unity of action—and adaptation of means to a crtain end. Plants being thus constituted, by placing the whole of the food immediately surrounding the young potatoe plant, and none in the soil beyond, we evidently practice a sort of deception upon it, we induce it to make exertions at the commencement of its growth which its after means will not enable it to carry out; therefore, as Mr. Knight observed, abundant machinery will exist with a scarcity of raw material, and the crop of tubers will naturally be found defective, comparatively, with the growth of the plants. The time will arrive when farmers will inquire how manure can be most equally diffused throughout the soil, especially for such crops as grain, in which unity of action, or equal ripening, is a point of considerable importance.

Mr. Knight advised that the flowers of potatoe plants should be plucked off, and he was very desirous to obtain varieties, which, owing to some malformation of the floral organs, or peculiarity of habit did not naturally blossom; because the production of blossoms and seeds must tend to diminish the weight of tubers, or they must be formed by an increased expenditure of the riches of the soil. There can be no doubt that the crop of tubers would be increased to some extent by plucking off the blossoms as soon as they were visible. If a Dutch florist wishes to propagate a hyacinth, he adopts means to prevent its flowering, and a progeny of young bulbs is the consequence. If an English tulip grower has a bulb which grows too strong, producing seven or eight petals instead of six, the required number, in order to tame it he allows it to ripen its seeds. An onion forms its bulb one year, blossoms and seeds the next, and so dies; but persist in not allowing the plant to blossom, and the formation of other bulbs will be the result. The sap which these plants would have naturally employed in the formation of seeds, is thus made to contribute to the growth of bulbs. By depriving the potatoe plant of its tubers we cause it to blossom and seed abundantly; obviously the same sap gives existence alike to tubers and seeds; therefore, by preventing the growth of flowers and seeds, we must add to the growth of tubers.

Many experiments have been made from time to time with a view to determine whether any and what benefit is to be derived from plucking off the blossoms of the potatoe plants, and very different results have been arrived at. Some maintaining that they have proved experimentally that it is highly beneficial to remove the flowers; others, with equal confidence, refer to their experiments and contend that no advantage whatever is gained by the practice. Both may be perfectly right as to the result of their experiments. The difference of opinion, I conceive, arises from not taking into account the influence of certain circumstances, which must interfere with or vary the results. The benefit or otherwise of plucking off the flowers, will depend partly upon the habits of the variety of the potatoe, partly upon the quality of the soil, and partly upon the nature of the season.

The greater the number of berries a variety naturally produces, the greater will be the gain of removing the flower buds. Second early varieties seldom produce many seeds, consequently little or no advantage could be gained by removing the flowers of these, as compared with late varieties, which generally bear seeds abundantly. The quantity of berries produced by a given late variety will also depend upon the quality of the soil. The better and more suitable the soil may be, the greater will be the health and productiveness of a plant. The reproductive powers of a plant also depend upon the nature of the season. If the weather of June and July should be warm and bright with frequent showers, we may observe that even intermediate varieties are enabled to elaborate a quantity of sap equal to the wants of tubers and seeds, and in such a season the crop of berries of a late variety would be most abundant. The greatest amount of benefit to be derived from plucking off the blossoms, will therefore, obviously be from a late variety, growing in a soil and season favorable to the potatoe.

Much also depends on the degree of care observed in nipping off the blossoms. The plants are nearly full grown when they flower, and if many stems are broken or laid by the children employed, this must tend to neutralize the benefit of destroying the flowers. In the Transactions of the Highland Society of Scotland it is said the difference in favor of plucking off the blossoms as soon as they appear, instead of allowing them to remain, was nearly one-sixth of the crop. This may be considered an extreme case; but from a late variety favorably situated we may safely calculate on a gain of tubers of not less than one ton per acre.— Much difference of opinion exists as to whether potatoes intended for sets should be partially or thoroughly ripened. Under-ripe sets have proved highly beneficial in mitigating the curl and dry-rot diseases; and I believe it is certain they invariably produce more vigorous and productive plants than perfectly ripe tubers of the same variety. I was first taught this lesson by some villagers who were noted for the earliness of their potatoes. For two or three successive seasons I obtained my seed-stock from them, and was always assured it was of the same early variety they grew themselves. But I could not produce my crops so early as they, by at least a fortnight; and being unable to account for this difference, I resolved to buy the first potatoes they brought to market having the appearance of being nearly ripe. I did so, and the tubers were so immature that they shrivelled almost like prunes before the time of planting; but I found I was now enabled to grow them not only nearly as early as the villagers, but larger also; and the increased size of the tubers I considered to be a consequence of the greater vigor of the plants afforded by these under-ripe sets.

Mr. Knight planted an early variety in July; the tubers produced were soft and watery, and unfit for food; but, as he anticipated, they afforded the best of plants; "they presented the appearance of a different variety, and afforded a more abundant crop and larger tubers than he had ever before obtained from the same variety." But the crop was not quite so early: Mr. Knight attributed "this variation in the periods of maturity of the crops, solely to different degrees of luxuriance in the plants, and to the increased size of the tubers in the one." But I suspect that the difference was not solely owing to these causes.

We see in a backward spring, how impatient vegetation seems to be at the restraint which is imposed upon it, and with what rapidity and energy plants grow in such a season, when the weather becomes favorable. A peach tree which Mr. Knight had grown under glass, he afterwards planted out by the side of a tree, of the same variety which had always been grown in the open air. And Mr. Knight observed, that the former unfolded its blossoms nine days earlier, and ripened its fruit three weeks earlier than the latter. The forced plant commenced and finished its annual growth much earlier in the preceding year, than the plant which had been constantly grown in the open air. Its season of rest, therefore, sooner expired; it became sooner excitable in spring, and thus with the same stimulus of heat and light, it was enabled to make greater progress and mature its fruit in less time. And so it is with potatoes. The villagers, as I learned afterwards, grew two crops in the same year; the seed-tubers they sold, were from the second crop, but the sets they planted, were from the first crop; and this accounts for the difference in the period of ripening. The earlier the tubers are ripened. the sooner will the produce of these tubers come to maturity in the following year.

To obtain an increase of a ton per acre, but a few ounces will need to be added to the produce of each plant. When cultivators think of this, and of what Mr. Knight has said that soft and watery sets afforded more vigorous plants and more abundant and larger tubers than he had ever before obtained from the same variety, they must be convinced that this is an inquiry which demands their best attention. If an increase of one or two tons only could be added to the produce of an acre by this means, it would be so much clear gain—obtained without any additional expense of seed, labor, or manure. By attending to this point, by a judicious selection of varieties, by using middle sized tubers for sets, by a proper application of manure, by planting at the proper time, and at the proper depth, and by nipping off the blossoms, it is not improbable that the produce of an acre may be increased several tons. Attention to what may be considered trifles in cultivation involving little or no additional expense, may increase, in a very considerable degree, the aggregate result.

The average produce of potatoes in England is estimated at 10 tons per acre, some say it is only about 8 tons. I need only mention in order to show how much remains to be done generally, (and what a striking illustration it affords of the truth of the axiom "Knowledge is power,") that the produce of a crop grown by Mr. Knight, was pronounced by several gardeners and farmers in whose presence it was raised and weighed, to be equivalent to 34 tons, 8 cwt., 107lbs. per statute acre. And Mr. Knight felt satisfied that still larger crops may and will be obtained from an acre of ground.

ON THE ALLEGED TRANSMUTATION OF WHEAT INTO CHESS.

BY JOHN TOWNLEY, MOUNDVILLE, MARQUETTE CO., WIS.

As a set-off to the toil and inconveniences of one sort or another which must be encountered for a few years by those who hew out for themselves a home in the back woods, I thought there were at least three advantages which they would possess over farmers in older settled States. The cost of the land would be much less; they would have a virgin soil to cultivate, whose fertility, with judicious management, might be maintained, if not improved; and as most of the weeds which infest our crops interfere with their growth, and diminish their produce, are not natural to the soil but introduced plants, I considered, that by careful culture from the first, it would be no difficult matter to keep them within due bounds. The first crop of wheat I raised, convinced me, however, that so far as weeds were concerned I had been reckoning somewhat without my host; for when the crop came into ear, I was mortified to find a considerable proportion of it consisted of a worthless grass, which my neighbors told me was called chess or cheat. Its appearance in the crop they assured me was no fault of mine, as the wheat had been changed into chess by the magic of frost. This view of the case afforded me small comfort; I saw reasons to doubt the accuracy of this explanation then, and my subsequent experience has convinced me, that it is a most erroneous and mischievous doctrine to believe in. If I had not abundant opportunities for knowing how tenaciously this opinion is held by many, I should scarcely have thought it necessary to trouble you with my reasons for concluding, that no such change ever takes place. "What can't be cured, must be endured;" but let a man be once persuaded, that chess does not belong to this category of evils, and endeavors will then be made to get rid of it.

Wheat, in this climate, appears to have too many enemies to contend with, over which we have no control, ever to make it a very remunerative crop, it is therefore the more imperatively necessary that we should subdue an evil like this within our power, which lessens the quantity and degrades the quality of our wheat crops—more especially when this may be accomplished without the expenditure of much time or money.

One of the most weighty objections which may be urged against the notion that chess is wheat in a degenerate or abnormal condition is the fact, that chess is a distinct species of grass, known to botanists as *Bromus Secalinus*, affording seed which when sown produces chess plants, under all circumstances, and never wheat. A thousand plants may be examined and the probability is that not one would be found to differ materially from the botanical description of the species. Now if by the action of frost one plant is transformed into the other, how is it that there is no gradation in the change observable, that the metamorphosis should in all cases be so uniform and complete? Of late years much has been written by botanists on the metamorphosis of plants, or vegetable morphology, as it is usually called. Like most novel views, true though they may be, this met with considerable opposition, hence botanists who embraced this hypothesis, (a class of men second to none for accuracy of observation,) ransacked the vegetable world for specimens of plants in an abnormal state, in support of their position; but all that their investigations have enabled them to establish, all indeed that they were required to prove is, that all parts of a plant may be referred to the leaf as a type, that the floral envelopes and organs of reproduction, calyx, corolla, stamens, pistils, and seed are formed of the same elements and arranged upon the same plan as leaves; hence, when growing under peculiar circumstances, the different parts of a flower may be changed into each other, or into true leaves, and such changes have been very frequently observed; but I am not aware that there is an instance on record proving that any circumstances have so altered the character of a plant as to make it appear to a botanist not only specifically but generically distinct.

2nd. Chess is well known to be a British grass; it is found in the grain fields of England where the winters are seldom severe enough to injure the wheat plant. It is true, however, that chess is much more abundant here than in England. Being familiar with all the British grasses, excepting two or three very rare species, I could not remember having noticed chess frequently in wheat crops in England; and I find on referring to some works on British husbandry, that it is not generally included in the lists of the weeds of agriculture. Sir William Hooker in his British Flora says of the plant "not rare" thereby implying that it is far from common; but Dr. Gray, in his Botany of the Northern United States, very truly remarks "grain fields, &c., too common." Some may be ready to conclude that chess is more abundant in wheat crops here, because of the greater severity of our winters. But chess is not the only introduced plant which seems to thrive better in the United States than in its native country. The Berberry I noticed in some of the New England States, especially in the neighborhood of New Haven, much more common and vigorous than I had ever noticed in any district of England or Scotland. *Verbascum Thapsus*, the Moth Mullein, is far from being a common plant in England; I never met with it in quantity except in one or two localities on calcareous soils; here it grows with extraordinary vigor and seems as intent upon pushing its way westward as man himself. *Erigeron Canadense*, known as horse-weed, or butter-weed, is a native of both countries. In England, however, it is confined chiefly to one or two of the south-eastern counties. I never found the plant but in Kew Church yard, where my attention was directed to it by a notice in a London Botanical Journal, the Phytologist; here it is one of the most abundant and vilest of weeds the farmer has to contend with. We should not be justified then in concluding that chess is more abundant in the United States than in England owing to the wheat being more injured by frost, seeing that other plants are similarly affected by the difference in the soil and climate of the two countries.

3rd. If chess was originally a plant of wheat transformed by the action of frost, or other adverse causes, why are chess plants frequently seen so vigorous by the side of weak plants of wheat, both of which must have been subject to the action of the same external influences? One plant of chess, which I pulled up in the summer of 1850, had forty-three stems, yet in the same clump, a wheat plant was growing with only two stems. I omitted to count the seeds of each, but we may presume if the wheat plant yielded sixty grains for one sown, the reproductive powers of the chess plant would have been at a low estimate, seventeen hundred for one, a somewhat strange result, truly, of the action of adverse influences.

4th. I have examined crops of wheat, which, in some parts, had been more injured by frost than others, and in these parts the number of chess plants compared with wheat plants, was greater than in other parts of the field, but if a square rod of land had been measured in these different parts, and the number of chess plants counted in each, my observations lead me to conclude, that there would have been found a nearly equal number of plants in one as in the other. Chess is obviously a hardier plant than wheat, it is better able to withstand the action of frost;

thus, when a considerable number of wheat plants perish, the chess plants which remain, not only actually bear a greater proportion to the wheat, than in other parts of the same field not injured; but the difference does not end here, these plants have now a more extensive pasture for their roots, and a greater share of light for their leaves, than if they had vigorous wheat plants to contend with, they consequently grow more luxuriantly, throw up more numerous stems, and cover a greater space of ground. The chess thus not only actually bears a greater proportion to the wheat, but it seems more abundant, the number of plants greater than in parts where the wheat has been less killed or weakened by frost; hence I suspect the conclusion has been arrived at, that wheat, by the action of frost, has been changed into chess.

5th. I have carefully taken up many plants of chess, and I have usually found the husks of the seed from which they had sprung; these I have examined by the aid of a good lens, and they appeared to me in all cases, the seed-coats of chess and not of wheat.

6th. Where I am is new land; wheat was first sown here in the fall of 1849, and as chess is not indigenous to the soil, nor yet introduced into the land by manure, I have, in the last three seasons, had a favorable opportunity for observing the effects of frost on the wheat crop, and whether the appearance of chess depends on the severity of the weather, or the injury the wheat plant has sustained during winter, or whether the quantity grown is not due rather to other circumstances, under our control. In the first year or so, fanning mills were somewhat scarce here, much wheat was, consequently, indifferently cleaned, and in some instances, sown in that state; others had taken extra pains to procure clean seed, and two or three patches were raised from wheat gleaned in the field; in some cases, wheat was sown after wheat, and from the same sample, on newly broken-up land adjoining. The proportion of chess, I found in all cases, all other circumstances being similar, was greatest where wheat followed wheat, because, in addition to the chess sown with the wheat, there was a considerable quantity of self-sown seed already in the land, from the previous year's crop. In one instance, some very clean purchased seed had been sown, it was put through the mill, till it seemed free from chess; the seed not being sufficient, a strip was sown with other wheat, which had been merely chaffed; the former produced a comparatively pure crop, the latter a nearly equal proportion of chess, rye and wheat.

I was told of a crop in the summer of 1851 that was said to be perfectly free from chess, and it certainly required a very close examination to detect a plant of chess in it; in the same season a crop was grown on the adjoining quarter section so foul, that when the plants came into ear, the proportion of chess to wheat was so great that it was considered advisable to mow it green for foddder rather than let it ripen. The former was the produce of wheat gleaned in the field, the latter was admitted to be largely mixed with chess when sown. Apart from all theoretical considerations, the result of my observations and experience here is, that wheat crops are pure and clean in proportion to the cleanness of the land, and to the purity and cleanness of the seed when sown. If this be so, then the obvious remedy for this evil is, first, to thoroughly clean the land, and secondly, to obtain perfectly clean seed. I may venture to suggest, whether we may not derive advantage in various ways by paying greater attention to the purity and excellence of the seeds for our various crops—for my own part, so far as regards wheat, I intend, by comparative experiments, to determine which of the various kinds of wheat I can procure, is best adapted to the soil and climate, and then endeavor to raise a pure crop by commencing with a single grain, or at all events with a single ear, for not only is it a matter of consequence to rid our crops of chess, but it is of some importance that a crop should consist of one variety, for not only is there a difference in the productive powers and quality of different varieties, but there is a difference frequently of some days in the periods of ripening, and a crop which is a mixture of different varieties, some ripening sooner than others, cannot yield so well, or afford so equal or so fair and heavy a sample as a pure crop, adapted to the soil and climate.

Although wheat has been cultivated from time immemorial by the most civilized nations of the world, there yet appears to be many questions relating to the culture of the plant respecting which no very precise or satisfactory knowledge exists. Experiments indeed remain to be made on the wheat plant alone which would take a life time to determine. Who, for instance, has proved what is the best mode of obtaining more productive and valuable varieties, whether by cross-breeding or judicious selection through successive generations? or who can at present say where is the limit to improvement in hardiness, quality, and productiveness?—Again, can an improved variety be continued pure and equally productive for an unlimited period when obtained, and if so, what are the likeliest means for effecting that object? Before this can be satisfactorily answered we must inquire further, what are the causes of the deterioration of varieties of grain? May it be owing to a variety not being suited to the soil and climate? Are some varieties better adapted to one soil and climate than to another? Do some thrive better in one soil than another in the same climate? What are the precise effects of soil and climate on different varieties? What are the effects of a change of soil independent of climate? What is the result of raising seed-wheat on the same farm, but with a different or special manure?

May the deterioration of an improved variety be owing chiefly to the mixture of other varieties in the crop? Do varieties of distinct habit and character when mixed and grown together cross-breed. Is wheat, like most of our fruits, and what are called florist's flowers liable to "sport" into varieties, that is, will it produce plants differing from each other and from the parent stock, and this without the action of the pollen of a second variety? Will not a variety raised to a high state of perfection, by selection and skilful culture, gradually deteriorate when grown a number of years by the ordinary methods? In addition to hardy and productive habits, is it possible to obtain varieties having some constitutional peculiarity which will enable them to resist diseases, especially diseases arising from the attacks of parasitical fungi? In what state of ripeness does seed-wheat afford the most vigorous plant? What are the effects of different depths, times and modes of sowing, and of different quantities sown per acre?

WILD RICE.

Willow River, December 11th, 1852.

My Dear Sir:—The Wild Rice of this country grows usually on the borders of small lakes, but sometimes, when the water is not too deep, and the bottom apparently soft, it will extend over a whole lake, literally filling it; so that when it is luxuriant, it is with difficulty that a canoe can be worked through it. It usually grows in water from six to nine feet deep, and rises about the same height above the water, with a straw and head very similar to oats; in fact, in many places, when nearly ripe, it has the appearance of a large, luxuriant oat field. The kernel, after the husk is taken off, in appearance resembles both the oat and a kernel of smut rye; it is larger than the former, but not as large as the latter usually grows. In color, it is almost a transparent green.

The method which the Indians take to gather it, and prepare it for food, is as follows: A short time before it is fully ripe, two squaws will go amongst it with a canoe, and gather a handful of the straws together, tie them so, and then break down the heads and leave them hanging till it is dry enough to thresh. They have a double object in thus tying the straws together: one is to prevent the waving of the heads together by the action of the wind, and thus threshing out the grain, and the other to prevent the straws from settling down into the water when they have become fully ripe. After it has remained tied in this way for about two weeks, and become fully ripe, and dry enough to thresh, the two squaws again start with their canoe, one of them armed with a crooked stick about three feet long, and the other with a paddle to steer or propel the canoe. Arrived at the rice field, the one with the stick seizes the clusters of heads, and bending them over into the canoe, strikes them two or three blows with the stick, and in this way threshes out the grain. In this manner they will gather several bushels in a day. It is then taken to where the lodge is for the time being, and kiln-dried thoroughly, (usually enough to cook it,) after which it is emptied into skins, and undergoes a process of beating with sticks, to take off the husks, when it is fit for use. It then enters into, and becomes a part of all, or nearly all, their cookery. In spring, when sugar-making commences, and the Indians are about to start on their spring hunt, they take a quantity, and mix some grained sugar with it to carry with them as their principal supply of food. They then eat it without any further cooking. I have used it, and consider it far preferable to the Southern rice for soups, or boiled to eat with molasses or butter.

Whether it would improve by cultivation, I am not able to say, but think not. I am now, and have long been of the opinion, that the cultivation of it might be made very profitable, by having dams, so as to flow the land at pleasure. When the Indians wish it to grow in some favorable place, they gather some of it when it is fully ripe, and scatter it in the water, when it grows without any farther trouble on the part of the rude agriculturist.

It is usually worth two dollars per bushel. I have none now by me, but will endeavor to get some and forward to you soon. I can get none fit for seed until the next harvest, as the germinating power is killed in the drying.

Yours truly,

JOSEPH BOWRON.

To Albert C. Ingham, Esq.

Sec. of the Wis. State Agr. Society.

THE MORAL INFLUENCES OF HORTICULTURE.

The Grove, Northfield, Ill., December 20, 1852.

My Dear Sir:—A compliance with your request, that I furnish a horticultural paper, for your forthcoming volume of Transactions, is rendered difficult, by circumstances not necessary to mention; and, yet, I do not feel at liberty entirely to neglect your flattering call, inasmuch as I acknowledge your right to command the aid of my pen, and perhaps believe that the example of professional writers may prove of some avail, even, though, their communications contain little or nothing of practical value to the well-informed reader.

Now, the three or four pages of argument, floating in my mind, may not reach the paper in a way to convince a single individual, but I may excite thought, and that thought may cause investigation and application.

My theme is the Moral Influences of Horticulture; though I may incidentally glance at other phases of the question.

I consider Horticulture, not only "the fine art of rural life," but as the primary school of taste and refinement, and the normal school of practical country life.

To begin with the familiar and unquestionable branches; all who stop to think will admit, that a well-tilled garden is in reality a model farm; and from the results there, the large farmer can readily take practical lessons, on the general effects of improved fertility, by the use of manures, depth and fineness of tilth, thoroughness and extent of after-culture, incidental protection, irrigation, &c., and if we leave out the above consideration, it must still be admitted, that a good kitchen garden gives a larger return in wholesome and desirable food, for the small amount of occasional labor, than any part of a farm—the orchard excepted—and it furnishes, also, agreeable occupation for some hours that might be worse than wasted, were it not for this handy resource.

The fruit garden, the vineyard, and the orchard, take other and longer steps in the illustration of our theme. In money-profit, too, these pay much better than the balance of the farm; and in the family, as cheap luxuries, delicious food, acceptable medicines, prophylactic agents, and reliable substitutes for other articles in common use, ripe fruit is truly invaluable. But the influence of a more general production of certain fruits, for the manufacture of wine and cider, is more properly under consideration.

Cider can be made far superior in flavor to all the mixtures, sold as wine, and most of the ordinary importations; and yet, neither intoxicate, nor derange the digestive organs of those who drink it.

I have known dyspeptics drink really fine cider with great relish, and most satisfactory results; while at the same time, a glass of ordinary wine would be almost certain to cause prolonged misery, and alcoholic liquors (seldom taken) have no good effect whatever.

It has been proved that good wines can be grown at home, cheaper than any, of equal quality, can be imported; and it is by no means settled, that we cannot produce wines in the United States as cheap as they can in France and Germany. The difference in the price of labor is the only thing against it; and the contrivances of Yankee ingenuity will help to overcome that, and the difficulty of adapting or naturalizing wine grapes to soil and climate will be got over by the production of new varieties suited to the locality.

Taste in wines is somewhat arbitrary, and the growth of habit; but those who are accustomed to our pure American wines prefer them to any others; and for my part, I consider the Dry Catawba one of the most delicious of wines, and one of the least liable to produce bad effects upon the stomach or the brain. Indeed, like cider, the little alcohol, which these light wines may yield to distillation, exists in such a state of combination with the natural elements of the fruit, that a healthful exhilaration, rather than alcoholic stimulation, or intoxication, is produced by its introduction into the system; and then, it is well known to chemists, that wine of this kind is free from those deadly poisons, which may be obtained, as proximate principles, from the rum and whiskey of commerce, especially the latter, which contains half a dozen or more of these principles, more or less deadly in their nature, apart from the alcohol for which the whiskey is drank.

I shall not say a word on the ruinous and destructive use of alcohol, in its various forms, and under its many specious disguises—I could not add a single horror to the damning catalogue of misery and degradation; and yet, it is a solemn truth, that we do imbibe many poisons, besides alcohol, when we drink the ordinary wines and distillations, malt liquors, &c.

And now, admitting that we must drink—or rather, that we will drink "something to give nature a jog"—had we not better take something not quite so apt to jog us off our balance, and into the grave, after this suicidal fashion?

We religiously hold to the faith, that the pure juice of the grape, the apple, pear, and some other fruits, properly prepared and fermented, refined and ripened, without the addition of any substance whatever, will answer every indication, as an exhilarating beverage, and very seldom either "steal away the senses," or drive a premature nail in the coffin.

Now, if I am right in my estimate of the ameliorating tendency of the pure juices of fruits, when contrasted with the effects of our ordinary stimulating drinks, had we not better plant orchards and vineyards, for the production of such agreeable beverages?

The experience of the old world favors this opinion; for, drunkenness is almost unknown amongst the vineyards, while it is in alarming excess where little cider and no wine, but much beer and whiskey are produced. And if we cannot prohibit the greater evil, would it not be a rational policy to supercede it by one of lesser magnitude? This is a mere speculation, and will not suit either end of the Temperance argument. But truth is sometimes found between extremes, and this idea is certainly worthy of some consideration.

But I come now to a more pleasing phase of my theme; one in which I see no questionable point, no lesser evil, no doubtful tendency, but one broad field of truthful nature, purity and moral excellence. And, yet, I shall find few readers, perhaps, ready to adopt my ultra views, simply because the training I advocate, has not fitted the many to comprehend or appreciate them.

It is of the influence of the beautiful that I would speak—the ornamental in Horticulture—the beautiful in Nature and Art—especially in reference to the education of the young, and the formation of character, by the early development of the higher, and the natural repression of the lower propensities of our nature. But will our association with physical beauty do this? We believe so—measurably at least. All are not born physically equal, and single specifics are as uncommon in education as they are in medicine—and I never discovered one in either—and yet, I believe tbat the influence of things, and the circumstances at home, are of paramount importance in education.

The earth is robed in varient beauty, and the principle pervades all living things, and forms of changing aspect; and throughout the civilized world this principle of beauty is all potent in guiding the tastes and appreciation of intellectual man. Its efficiency is greatest during the morning of our existence, but our enjoyment of it may be greater in the evening of a life on whose dawn the spirit of beauty impressed its glowing images.

There is no difficulty whatever in making the principle of beauty an element in early education. The child instinctively loves the beautiful, and proves it by extending a tiny hand and attempting to seize that which it had never seen before, and could not have learned to desire.—From the brightness of the stars to the verdure of the earth—from the bird and the butterfly, to the painted petals of the flowers—the child admires the beautiful, and is never far wrong in his first estimate of it.—Why, then, should we let the hard pressure of animal wants—the conventional absurdities of society—or the barren bleakness of an unadorned home, and a less lovely school-house—pervert the child's nature and put out this spark of divine light—the only mental ray that illumes the nascent understanding, which comes with us into the world!

There can be no doubt—there is no doubt—in the minds of all sensible persons, who have examined the subject without prejudice, that the things habitually presented to the eye of the child influence the mind of the mature man. This influence is, of course, modified by the physical organization of the individual, and the circumstances of after life. But the early impressions are, after all, those which must color individual character apart from physicial peculiarities; and who knows how often the circumstances of infant life destroy a noble, or enlarge and render active a naturally feeble faculty, or propensity for evil? We now know that the great and the good have generally come from a home of beauty and excellence; and we know, too, that vice and misery grow most luxuriantly in the frightful hot-beds of crime, sunk in the filthiest dens of our great cities. This we all admit; but we seldom enquire whether the wordless, but speaking beauties of Nature would not have prevented the evil growth which the moralist and the magistrate are called on to restrain—with how much real benefit, all who will, may see.

That which we sow in the spring-time of life shall we reap in the harvest of manhood; and if the young mind is seeded with evil, and nurtured in poverty and wretchedness, can we reasonably look for a crop of honor and pure feeling, or high moral and intellectual excellence? If there be exceptions to the rule, they are rare indeed, and show that the Creator has impressed His seal of intellectual worth and integrity upon the physical organization of the individual with such innate force, that after-circumstances have not had the power to control the natural tendencies of the mind.

That education does much, all freely admit; but I believe that education commences much earlier in life than most people imagine. The child observes as soon as he sees, and learns before he can speak. That our earliest thoughts pass from the memory, is no evidence that we do not think when very young. Witness the delight of the child-in-arms at beholding beautiful objects; listen to the pertinent questions of the infant prattler, and observe his silent reveries, and then say, if appreciation and consequent thought are not active, though still undeveloped!

Things act upon the mind of the infant before words are understood; and therefore, things, not words, should be the mediums of early instruction; and surely then, the things most prominently before the learner should be the most fitting and beautiful of their kind.

Forms of beauty and gracefulness direct the taste, or create it; the grand and the picturesque exalt the imagination; order, congruity, cheerfulness and comfort at home, all help to increase our love for these, and render home lessons as efficient as pleasurable; and pleasure is as necessary as food and air. Never forget this, but seek to make the pleasures of your child, not only recreative and suitable, but incidental helps, also in the process of education, or physical and mental developement.

The free air, the earth's green carpet, and the grateful screen of trees, should never be wanting in the child's early play-time, nor denied to the school-boy's occasional enjoyment, and more necessary exercise.

Ever in the eye of the child, and the appreciation of true taste, when practicable, our homes should be made the most beautiful spots on earth. Ornament and practical utility should go hand in hand; for ornament has its uses. And next to our homes, I would make the school-house pleasant and commodious, and give it a cheerful countenance, and exact and tasteful architectural proportions and finish. And then, though parents have neglected these requisites, in home architecture, the pupils of the district will have, at least, one good model often before them, which, I must say, they now seldom have, not even in our churches or other public buildings.

But I must close this lengthened essay. In writing, it has not been my object to press my opinions with numerous examples, which I might easily do, but merely draw attention to the subject of the beautiful in Horticulture, in relation to education, and leave my readers to make their own observations, and draw their inferences, from examples always within reach.

That they will find the influences of the beautiful in accordance with my views, if they look for them, I cannot doubt; and that they will find a larger proportion of bad taste, narrow intellects, and evil propensities, coming out of homes where the beautiful had no existence, I am positively certain, even where all else has been comparatively equal in education.

And how cheap are all these beautiful things of the garden and lawn! How passing cheap can we purchase happiness for the young, and give a right direction to their forming tastes and faculties! A log cabin may have taste and comfort, and cheerful, happy faces within, and without, a few native trees, an American creeper, or a wild vine, fittingly planted, will produce more tasteful effect than an hundred times the cost, in such decorations as the village carpenter is most apt to give the rich farmer's dwelling, and the rich district's school-house. And if my farmer friends will go a little further, and purchase five dollars' worth of hardy shrubs and perennial flowering plants, and to keep up the midsummer display, add thereto the seeds of a few annual flowers, they may easily render their rough, picket-fenced front-yards as fittingly beautiful and creditable as the most expensive show grounds; and with these living embellishments, nineteen well-informed persons out of every twenty, will give the preference in a decision of taste, to the log-house in its place, over the most ambitious mountain of brick and mortar, or the glaring barn-like "big, white house" of your "fore-handed" country "squire," or your rich cit, who comes into the country to rusticate, and builds his house and plans his grounds after city models.

And now, to conclude, I have but to repeat my advice, that you gather around your dwellings the cheap beauties of nature—trees, shrubs, vines, and flowering plants—and don't forget the delicious carpet of grass.

And let these also adorn the school-house, and that building towards which the glad sabbath directs your reverent steps; and last, that sacred spot where rest the ashes of kindred dead, for there is no reason why the grave-yard should wear a gloomy dress, since it is the last home of us all.

Truly, your friend,

JOHN A. KENNICOTT.

To Albert C. Ingham, Esq.
Sec. of the Wis. State Agr. Society.

SEEDLINGS *versus* GRAFTS, OR TOP-GRAFTS *versus* ROOT-GRAFTS.

BY F. K. PHŒNIX.

These subjects having been touched upon by the writer in a communication published in the first volume of the Transactions are deemed worthy of more special notice.

Seedlings it is not necessary to define. Grafted or budded sorts are those selected from the former, on account of the superiority of the fruit and other good qualities, as hardihood and productiveness, and propagated mostly by grafting or budding, generally upon seedling stocks, or until within twenty-five years, when an improvement or innovation called root-grafting, has been widely introduced.

With respect to the general system of grafting or budding, it would be folly to question its safety and utility when properly used, though, unquestionably, an operation to be resorted to when necessary, and avoided when practicable. The point is, simply, to what extent shall this practice be carried? and in view of the vast importance of Horticulture—in view of its increasing risks and responsibilities—everything pertaining to that prime operation should be carefully investigated.

Grafting or budding, considered as an abstract mechanical operation, performed under favorable circumstances—as, for instance, to graft or bud a young tree with its own wood—cannot be regarded as inherently objectionable or dangerous, or as exerting any possible influence, other than for the time being to lessen its size and retard its growth. It is only in its perversions or accidents, its newly created world of changes and circumstances, that it can work injury. In the endless variety of combinations produced, there must be an increase of risk—ample occasion for all the ills complained of as belonging especially to buds or grafts. Thus we have: 1st. The subjects, endlessly diverse in habits and preferences as to soils, climates, culture, &c. 2d. The operation, including time, manner and results. If these be taken into the account, we shall wonder not so much at the degeneracy as at the endurance of our improved varieties. It is indeed maintained by some, that what we have gained in one direction we have lost in another—that our choicest fruits, not only pomological, but intellectual, have been dearly bought at a sacrifice of physical vigor—"wiser and weaker," as saith the old proverb. This is a position not taken without considerable show of reason, but believing it opposed to the prevailing fact, as well as to the hopeful theory of "Progress"—a progress not seeming and partial, but real, and to some extent proportionate, we must reject it, while allowing, and otherwise explaining the facts from which it springs. To say that culture and improvement pertain not to the entire range of human effort, as well to the physical as the intellectual, as well to the tree as the fruit, is manifestly absurd—though, at the same time it is evident this culture and improvement have been in many instances partially and unwisely bestowed.

Whatever may be our theory, certain baneful tendencies and results are too obvious to be disregarded—let each then but oppose in his own way and to the best of his ability.

In discussing this subject we shall endeavor to prove,

1st. That the seedling is physically the more perfect tree; theoretically, because of its unity and entireness, simplicity and naturalness throughout, in both origin and developement, roots, tops, growth and product. Nature in any given process is perfect. Practically, because the wood of seedlings is firmer, bark tougher, and wounds made on them heal more readily; they are generally more productive and hardy, and accommodate themselves best to different soils and climates. Therefore,

2d. Though grafting is indispensible, yet that that grafting, other things being equal, will be best, which employs most of the seedling stock.

These positions we shall not discuss separately, nor is it perhaps necessary, for we doubt if any one conversant with the subject would feel inclined to question them; in fact, with regard to hardihood the general impression has seemed to be, that seedlings were quite too tough—most unnecessarily and inconveniently thorny and rugged!

The ultimate issue no doubt is between seeds and buds—the rough, hardy product of the one and the smooth, tender, rapid growth of the other—which afford the best foundation or vital centres to work from?

With regard to the seed it is nature's primal, chosen method of reproduction, the perfect embryo of a new, perfect individual; nothing second hand or second rate, or factitious or adventitious about it; it is not one of many parts of a tree given to manufacture the rest, but all parts reduced, embodied and pledged to reproduce the whole. In examining the seed more closely, we find one part designed for the radicle which is first developed; then another designed for the stem, and that these parts are utterly distinct, not interchangeable, a most significant fact. Each part then must remain by itself, each for its own element and yet each dependant on the other. And here, at the point of union, if anywhere, is the life of the tree, the very seat of vitality, that common centre from which all other parts radiate, and which, therefore, if any part, is indispensable.

That buds possess a species of vitality, and are capable of indefinite, and in some cases, profitable extension or multiplication, is undeniable. Still it must be from the very nature of things, an inferior, dependent process. There is no real reproduction, no internal renewal of life or vigor, or individuality; but merely a sort of polypus-like increase with, as I must think, a decided tendency (at least among the more important varities of fruits) in every successive generation, to lose a portion of its original reproductive energy, unless that tendency be counteracted by working on strong, seedling stocks.

The crowning effort of nature is reproduction; but man has interfered and diverted her energies in part from the formation of the most and best seeds, to the production of fine flowers or fruits, making every other consideration secondary. The consequence is, that some of our choicest fruits and flowers have almost no seeds and are themselves few and feeble. Observe the wonderful productiveness of—we had almost said—whatever is not cultivated; but compare the products of the original types of our fruits and flowers with those of the choice varieties, though none but the most productive are selected for propagation. No one can for a moment doubt that this seed-bearing propensity, which thus underlies our whole system of horticultural production, is decidedly the strongest in seedlings; and, therefore, as we value the products of our trees, we should not lightly thrust aside their main prop. Habit is (almost) everything, and if our trees, generation after generation, are to be worked from highly forced, root-grafted, nursery trees, which are often little better than rooted cuttings or more properly leaf-buds far removed from seedlings, or fruit buds, we must not wonder if a habit of growing instead of bearing, there acquired and thus ingrained, predominates ever after. Like produces like, seedlings produce seeds, at least with whatever of fruit may be wrapped around them, while leaf-buds thus stereotyped, incline to produce leaf-buds alone. Though deeply conscious of our horticultural inferiority here at the West; this lesson I think we have learned by experience, and if our Eastern friends have not, I would barely suggest, that it might possibly be because their ancestors were not skilled in commercial gardening, especially the great art of root grafting! Justice, however, requires the acknowledgment in this connection, of our own faults—if such they shall prove to be—that root-grafting has ever been, as we believe, more generally practised at the West than the East; and that we (with every body else, esteeming it highly) wrote, so far as we know, one of the earliest articles upon it, descriptive and commendatory, ever published at the East. Hort. vol. I., page 280.

It will be argued that "a tree is a tree," and that root-grafts are "good enough, any way;" that seedlings, like grafts, vary in hardihood or productiveness; that the hardy or productive ones, of either class, are equally so, while the opposite, the one as well as the other, will go to the wall.

Precisely the argument when suckers were "just as good as any," and of some plants they still seem to be; and where, from time immemorial, suckers or cuttings have answered all purposes, we would not lightly call them in question. But for all that, discriminating cultivators cannot now be persuaded to trust many kinds of suckers as they did once. Trees do unquestionably differ on account of different modes of propagation; thus, we have standards and dwarfs, seedlings and suckers, root-grafts and top-grafts, unlike in many and important particulars. Not, but that they may produce similar fruit, and under similar and favorable circumstances, be much alike throughout, still, there is a plain, practical distinction. So with the different parts of a tree, the roots and tops have utterly distinct functions, a root cannot become a branch, nor a branch a proper root. Thus, a seedling varies from a sucker or cutting in its root and collar, especially and unquestionably throughout. Hence the impropriety of manufacturing entire trees, roots, stems, and branches, out of tops. Nature will doubtless do the best that can be done with them, but how can they form as natural trees as seedlings? The proper place to use tops, is to make tops again, at least, with the nobler fruits, so liable as they have become to untoward influences, and where so much is at stake, let nature govern, at least, in laying the foundation, nor can it be too rugged and enduring.

Trees differ also in being of different varieties as well as classes. It is said, there are sections where nearly all varieties are root-grafted, and with perfect success. In other sections, and widely too, throughout the North and West, some varieties are generally recognized as too tender for root-grafting, and in extreme cases for any situation. For one, I do not know where these tender varieties do succeed so perfectly. In the very best apple districts of Western New York, we have seen (rarely we admit, for we have never made any investigations with reference to this point) but we have seen the same effects from root-grafting that are complained of elsewhere—in the nursery bursting, and in the orchard dying out, at the collar, while seedlings flourish almost everywhere, and every improved variety, without exception, so far as we know, is rendered hardier, and, if any thing, more productive, when worked standard height on hardy seedling stocks. Is it not, then, the obvious dictate of sound policy to adhere inflexibly to the very best mode of propagation? Are we wise to take up with any thing less? To strengthen a feeble grower or renew stunted varieties we have ever been wont to work them on the best seedling stocks—thus acknowledging by common consent, from time immemorial, that with respect to vigor and hardihood, the bottoms govern. Bottoms change tops greatly and often for the better—while tops affect good bottoms, if at all, generally for the worse, except in the way of fruit.

I certainly would not deceive myself nor raise any false alarm—but let us suppose, if not unreasonable, that throughout our country, when once well covered with these tender root-grafted trees, some right western winter should prevail. It may be we shall have nothing more trying than those of 1851 and '52.—I certainly hope we may not. But again—root-grafts cannot be better than top-grafts; still, they are unquestionably different, and what will that difference result in? It may not be possible, yet we have thought whether they might not eventually turn out like suckers, essentially inferior. At all events, on which side, we ask, is the risk?

However, we do not by any means wish to ascribe perfection to seedlings—but we insist that to them as a class we must look as much for endurance and productiveness as to grafting for choice fruits. No one can be more sensible that the writer of the advantages of root-grafting, especially to the nursery-man—of the cheapness, beauty and popularity of that class of trees—and none will be more pleased to have it demonstrated that these advantages are not counter-balanced by any increase of risk. As a nursery-man, we have grown them mostly, and must do so while they are preferred. But there is, nevertheless, a class of stubborn facts we can explain in no other way than as above. With our present views, between a seedling and a graft of whatever style of the same fruit, every thing else being equal, we should prefer the former. But the truth of the whole matter summed up, we believe to be this—that there are few seedlings that might not be improved by grafting, and but few, if any, improved varieties that would not be materially improved by working standard height on strong healthy seedlings. Some good fruits there are, which produce the same, or nearly the same, from seed, and these it would be well to increase, if only to save the trouble of grafting. If it be argued that they would not be as productive, it must be because natural progress towards the formation of perfect varieties is at end—which we do not believe.

In this matter we wish to take no ultra, theoretical ground in favor of any thing like the limited duration of varieties. Of the two we prefer Dr. Turner's theory as set forth in his famous Essay on "The Vitality and Longevity of Trees"—for which we think the Horticultural world largely indebted to the author—as also for many other good things.—Under favorable circumstances we believe a given variety may endure through all time—but hardly, or to little purpose, if subjected to all manner of abuses. And so with individuals—if we would have them live out their natural lease, we must be as choice of the body as the mind—of the tree as the fruit. Therefore, as nursery-men, if we would be on the safe side, let us always retain the strongest possible hold upon that inexhaustible store-house of "vitality," that chief reliance, that staff of life in propagation—a good, sound, seedling stock! Nor should we discard grafting, although, like civilization, while it has vastly increased the numbers and merits of its subjects and possessors, it has, at the same time, unquestionably multiplied their diseases and risks—not from necessity but from neglect on our part—not to vex but to improve—that, as our strength is, so might be our exertions and our achievements.

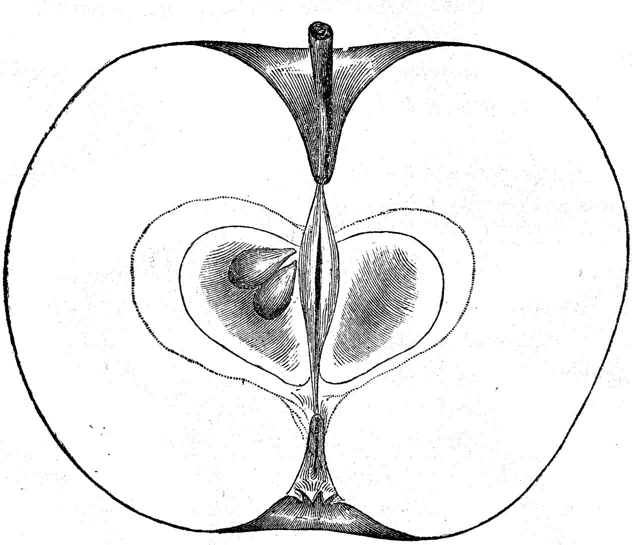
DESCRIPTIONS OF SIX VARIETIES OF WINTER APPLES, AND SIX VARIETIES OF PEARS, COUNTED AS WORTHY GENERAL CULTIVATION IN WISCONSIN.

BY F. R. ELLIOTT, CLEVELAND, O.

APPLES.—BELMONT.

Synonyms.—*Gate—Mamma Brown—Kelley White—Waxen—Golden Pippin—White Apple.*

We are unable to trace the origin of this variety beyond the records of the Ohio Pomological Transactions, where it is stated as originating in Lancaster county, Pa. Its name comes from its having been most widely disseminated from Belmont county, Ohio.

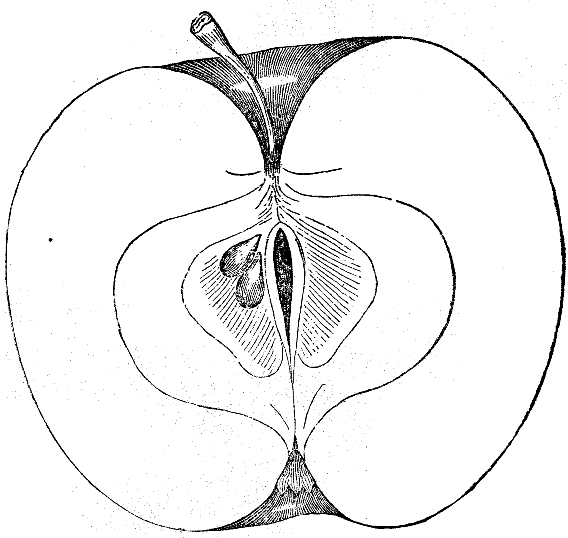


Size, medium to large.—*Form,* somewhat irregular, yet usually globular.—*Skin,* thin, smooth, oily.—*Color,* rich, clear, light-yellow, with a few dark-brown specks. When fully exposed to sun, it has a fine, clear, vermilion, red cheek. In southern sections of country it has slight russet marblings, with an occasional carmine spot on the sunny side, and many dull blotches of mould or fungus.—*Calyx,* varying from small and close, to open and reflexed.—*Basin,* shallow to moderately deep, always slightly furrowed.—*Stem,* projecting slightly beyond surrounding surface of fruit, always slender.—*Flesh,* yellowish white, fine grained, very tender, mild, sub-acid, juicy, delicate, sprightly flavor; grown upon alluvial soils, the flesh becomes more spongy and loses much of its fine flavor.—*Core*, rather large.—*Seeds*, abundant, rich, brownish, red, ovate, pyriform.—*Season*, November to February.

APPLES.—Westfield Seek-no-farther.

Synonyms.—*Connecticut Seek-no-farther*—*New England Seek-no-farther*—*Red Winter Pearmain*—of some Western growers.

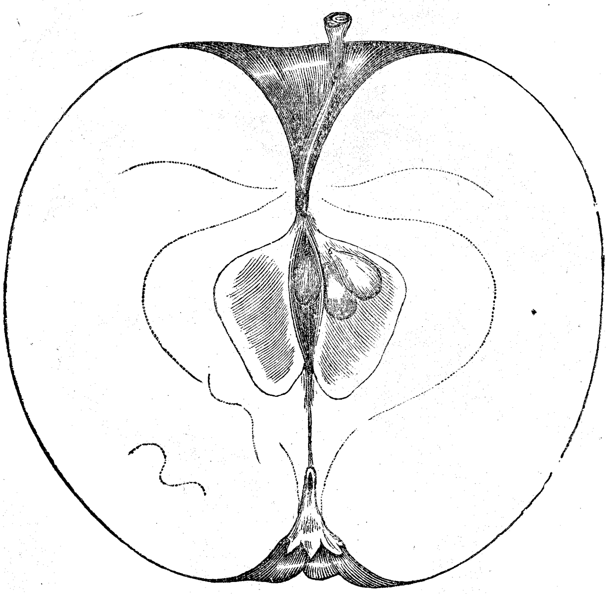
This old and popular fruit deserves a place in every collection. Grown in rich alluvial soils of the South, it does not keep as long as when grown on poorer soils at the North; but it loses none of its peculiar flavor or good qualities as a table fruit.



Size, medium.—*Form*, regular, roundish, conical, broadest at the base or stem end.—*Color*, light yellow ground, sunny side striped and splashed with red; small russet dots shaded around with light russet yellow; often considerable of russet about both stem and calyx; grown South, it is very much russetted, and about the stem the russet has appearance of rich bronze; progressing northward, it gradually loses its russet, until on light, sandy soils in Michigan, it becomes a pale yellow ground, with stripes and splashes of clear red and minute dots.—*Stem*, long and slender.—*Cavity*, open and regular.—*Calyx*, usually small, closed, sometimes half open, with short segments.—*Basin,* medium depth, regular form.—*Flesh,* yellowish, tender, sub-acid, with a rich pearmain flavor.—*Season,* November and March.

APPLES.—SWAAR.

This variety originated among the Dutch Settlers on the Hudson River. Its name is from a word in the Low Dutch, meaning *heavy.* It requires rich, warm soil, to perfect the fruit. On cold clay or wet soils it has none of the peculiar rich flavor which uniformly characterizes it when well and favorably grown.

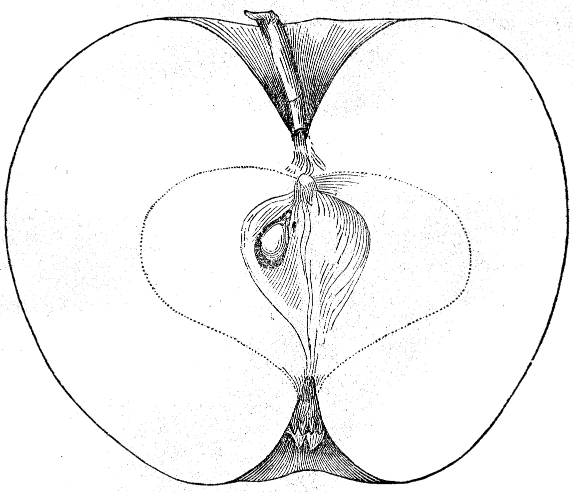


Size, medium to large.—*Form,* regular roundish, sometimes a little angular and often ribbed or unequal on its surface.—*Color,* rich deep yellow, often tinged with red where fully exposed to the sun, dotted with numerous brown specks and marblings of gray russet, particularly round the stalk.—*Stem,* slender, medium length.—*Cavity,* regular round.—*Calyx,* medium to small greenish half closed.—*Basin,* shallow, slightly furrowed.—*Flesh,* fine grained, yellowish, tender, sub-acid, sprightly and rich in aroma.—*Core,* medium.—*Seeds,* full, plump, ovate, conical.—*Season,* December to March.

APPLES.—Red Canada.

Synonyms.—*Richfield Nonsuch— Old Nonsuch—Nonsuch.*

In 1845, this fruit appeared hardly to be known, except in a few localities; under the impression that it was an old variety, we traced it back to New England, where we found it was known as *Old Nonsuch.* Subsequently it was introduced under the title by which we now choose to recognize it, and claimed to be of Canadian origin. Were it not for the confusion likely to be entailed, we should prefer to hold to rules of Pomology and call it *Nonsuch,* but it differing so materially from the *Nonsuch* of all foreign authors, is our reason for continuing the name, "Red Canada." It is doubtless of American origin, succeeding well in all rich stony soils. The young trees are slender in growth, and rather tardy in coming into bearing; but as they become older, their productiveness and uniform size and beauty of fruit, make full amends.

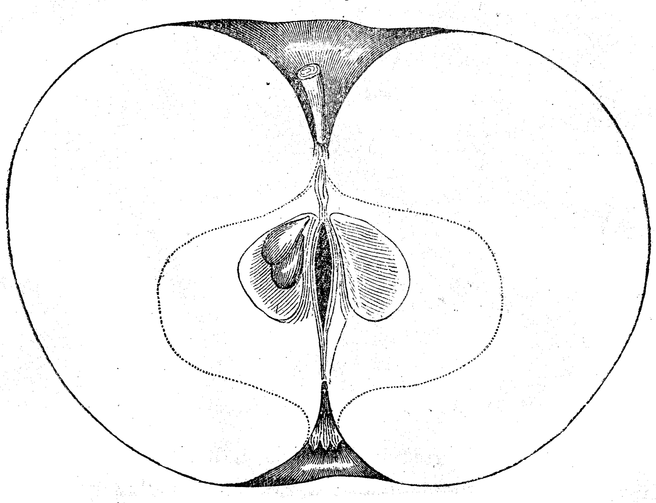


Size, medium.—*Form,* roundish, conical, flattened at base or tapering slightly towards the apex.—*Color,* a rich clear yellow ground; when exposed to the sun overspread with bright rich red or rather two shades, a light and dark red intermingled or striped; many light gray dots, giving, at first sight, an appearance of somewhat rough exterior.—*Skin,* thin and tender.—*Calyx,* closed, small.—*Basin,* open moderate depth, slightly furrowed or uneven.—*Stem,* varying from short and stout to slender and rather long; usually the stem extends beyond surrounding surface of fruit.—*Cavity,* rather deep and regular, with an occasional sprinkling of light russet.—*Flesh,* yellowish, white, tender, mild, sub-acid, juicy, sprightly, a mild aroma and delicate flavor.—*Core,* small, compact.—*Seeds,* plump, ovate, pyriform.—*Season,* December to March, but is often kept, without extra care, until June.

APPLES.—Pryor's Red.

Synonyms.—*Pryor's Late Red—Yellow Pryor.*

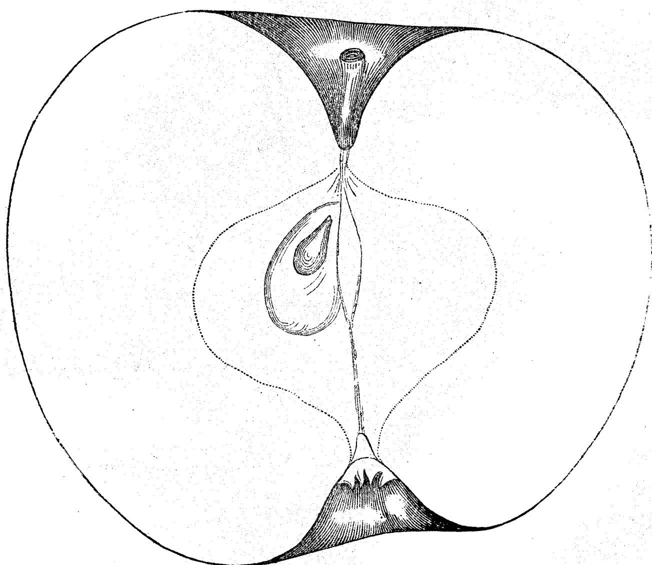
This variety bears strong impress of a seedling, from a cross between Westfield Seek-no-farther and Roxbury Russet; partaking most largely of the Seek-no-farther. The trees are upright, slow growing, healthy, tardy in coming into bearing; but once in bearing, produce moderate crops every year. In the nursery it is said to succeed best, grafted on strong roots. It evidently requires a rich strong soil, as specimens we have received grown in southern Indiana, measured four inches diameter and three inches from stem to eye; while specimens grown farther north and on poorer soils, were hardly of medium size.



Size, medium to large.—*Form,* angular roundish, tapering to the apex, sometimes even broad at the apex, being roundish, angular, flattened.—*Color,* pale yellow, ground mostly overspread with rich, warm, red russet, marbled and splashed with bronzed yellow near the stem, and with yellow russet spots on surface, and often a bloom; grown in northern localities, it is very little russet, except near the stem, while the russet spots become dark in centre, surrounded by lighter shade.—*Stem,* short. —*Cavity,* narrow.—*Calyx,* small, segments, erect.—*Basin,* abrupt, pretty deep, round and even, occasionally shallow.—*Flesh,* yellowish, tender, mild, sub-acid, of sprightly, pleasant, pearmain flavor.—*Core,* medium, with an encircling, concentric line, centre slightly hollow—*Seeds,* varying in form.—*Season,* January to June.

APPLES—BROADWELL.

This variety originated near Cincinnatti, Ohio, and although we have examined and eaten of the fruit, both there, and at the residence of our esteemed friend, Prof. J. P. Kirtland, we yet prefer giving our description from the manuscript of Mr. A. H. Ernst, of Cincinnatti, well known as a careful pomologist, and who has kindly loaned us the use of his notes.

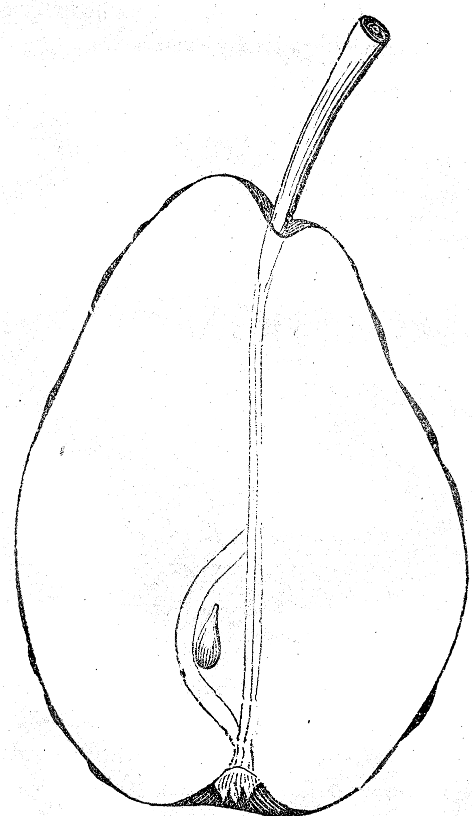


Size, medium to large.—*Form,* globular conical, flattened at the base, regular and uniform.–*Calyx,* open, segments short.–*Basin,* narrow.–*Stem,* short.—*Cavity,* expanded.—*Color,* light yellow, with cloudy flakes, and in exposed specimens brownish bronze.—*Skin,* thin and smooth.—*Flesh,* white, tender, fine grained, with a sweet, rich, very fine flavor.—*Core,* close, compact.—*Seeds,* small, plump, light brown.—*Season,* November to March. One of the most desirable of all winter sweet apples.

PEARS—BARTLETT.

Synonyms.—*Williams Bonchretien, Poire Guillaume.*

This is an English variety known universally in America under name of Bartlett. According to Downing, it originated in 1770 and was imported to this country in 1779. The name "*Williams Bonchretien*" or "*Williams Goodchristian*" is a mingling of English and French not admitted under the rules of Pomology, and we think is bad taste. The trees are thrifty, upright growth, and found to succeed in almost every soil and situation. Our outline was made from a medium or rather small size specimen.



Size, large to very large—*Form,* irregular, oblong, obovate, pyriform, surface uneven—*Skin,* thin and smooth—*Color,* clear yellow, occasionally marked with russet, and when grown exposed to sun it has a soft blush on sunny side.—*Stalk,* varying, one to one and a half inches long, stout.—*Cavity,* flat, shallow.—*Calyx,* medium size, rather open.—*Basin,* shallow, slightly furrowed.—*Flesh,* white fine grained, full of juice, sweet highly perfumed, vinous, but not rich flavor.—*Core,* small.—*Seeds,* long pyriform.—*Season,* according to locality; south it is a summer fruit, ripening in July, while far north it does not ripen until September; generally, in latitude 42° N., it ripens from 15th August to 10th September.

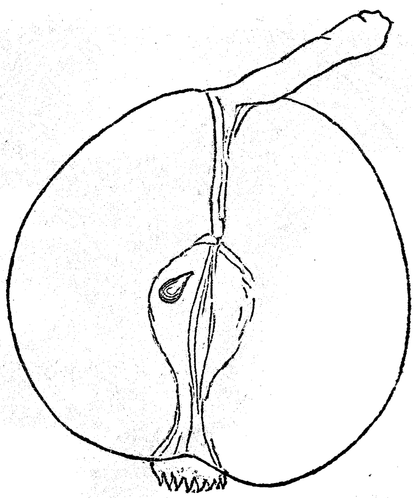
Windfalls of this fruit, gathered and ripened in the house, will often rank as more than second rate, while even the best grown specimens never reach, in point of flavor, the highest excellence.

PEARS—Kirtland.

Synonyms—*Seedling Seckel—Kirtland's Seedling.*

This valuable variety was raised from seed of the Seckel Pear by Henry T. Kirtland, Esq. of Mahoning Co., Ohio. The general habit of the tree is of a thrifty white doyenne, while it is hardy and free from blight as its original parent, and in productiveness superior.

Our description is copied from one written by Prof. Kirtland.

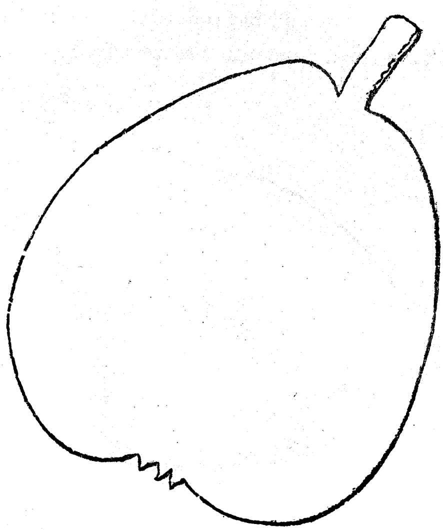


Size, medium, circumference six and a half inches; length, including stem, two and a half.—*Form,* globular ovate.—*Color,* rich, cinnamon russet, varying to a dull green.—*Flesh,* white, fine texture, melting, juicy, sweet and rich, with a highly delicious aromatic flavor.—*Seeds,* usually full, short and blackish.—*Stem,* six-eighths of an inch in length, thick, and somewhat curved.—*Calyx,* small, moderately deep, segments, short, reflexed and persistent.—*Season,* September.

This description was made from specimens, grown in ordinary soil, and will be found correct, as an average, on full bearing trees. We have seen specimens grown in rich soil, and with high culture, that more than doubled the size of description.

PEARS—Buffum.

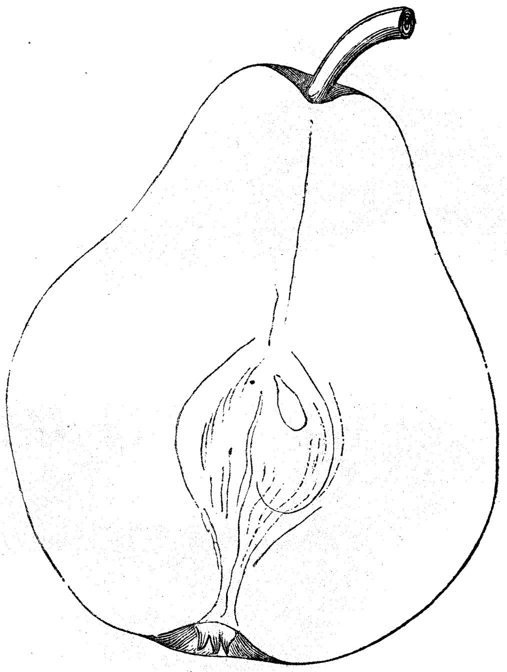
The Buffum pear originated in Rhode Island, and was introduced to notice of fruit growers, sometime about 1827-8. It was first fully described in Hovey's Magazine for 1844, although both Manning and Kenrick had previously noticed it. The trees are upright, strong growers, with reddish brown shoots, uniformly productive, and rarely affected with blight. Fruit somewhat variable in quality from superior to insipid, as it is more or less exposed to the sun in ripening.



Size, medium.—*Form* oblong obovate, one side usually a little depressed.—*Color,* from a dull, brownish green, to a deep yellow, one half finely suffused with bright red, sprinkled with small brown dots, or a little russet.—*Stem,* short, stout, inserted in a shallow cavity.—*Calyx,* with small segments.—*Basin,* broad and shallow.—*Flesh,* white, buttery, sweet and agreeable flavor—*Core,* medium—*Season,* September, but often lasts into October.

PEARS.—Beurre d'Anjou.

This variety was imported from France, and is comparatively new at the West. The vigorous healthy character of the trees, together with its habit of early and abundant fruiting, we think warrants its extended culture. The wood is stout and of a pale dull yellow.

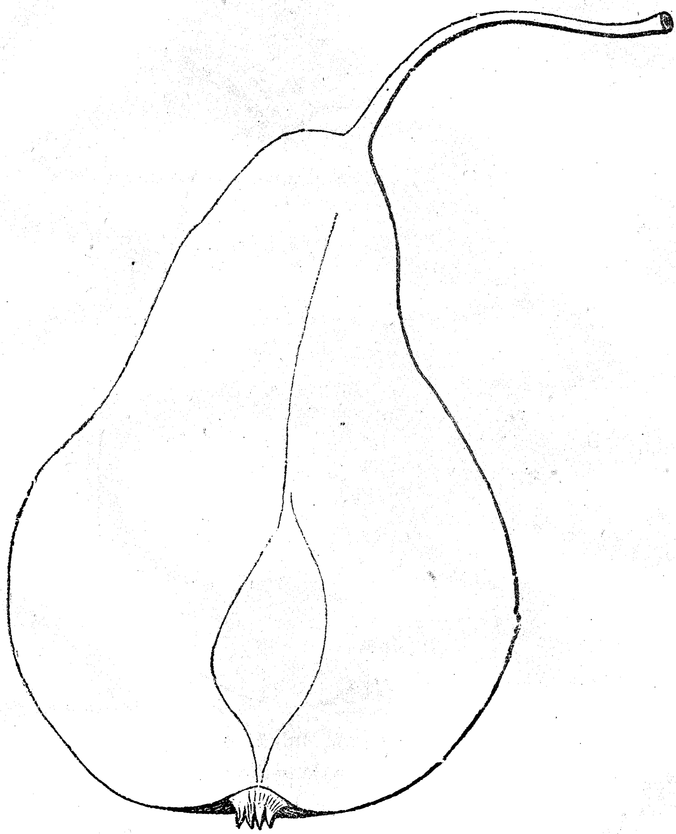


Size, large.—*Form,* oblong obovate, full at the crown, tapering to an obtuse point at the stem.—*Color,* pale yellow, dull red on the sunny side, much russetted around the eye, and regularly covered with minute russet specks.—*Stem,* short, thick, curved and obliquely inserted in a shallow cavity, formed by uneven swellings and projections of the fruit. —*Calyx,* medium sized, open with stout segments reflexed.—*Basin,* regularly formed, round.—*Flesh,* yellowish white, melting juicy, rich, sprightly and delicious.—*Core,* small.—*Seeds,* long, pointed.—*Season,* October and November.

PEARS.—Beurre Bosc.

Synonyms—*Calebasse Bosc—Marianne Nouvelle—Bosc's Flarchen-birne—Beurre d' Yelle.*

This Beurre Bosc was raised in 1807, by Van Mons, and named Calebasse Bosc, after M. Bosc, a distinguished Belgian cultivator. The trees are vigorous, healthy, with long straggling shoots of brownish olive, regular bearers, producing the fruit scattered singly upon the tree,



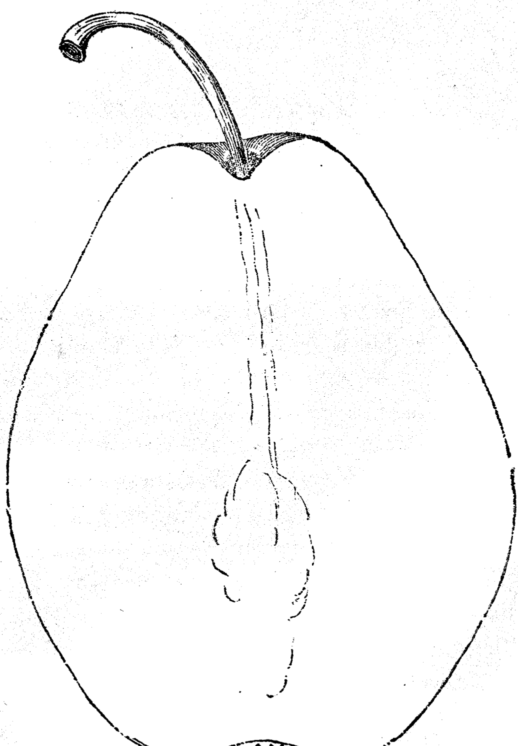
whence it is always of fine size. We have not been successful in growing it upon the quince root. "Having been received at the garden of the Horticultural Society of London, under the name of Beurre Bosc, Mr. Thompson thought it best to retain this name, as less likely to lead to confusion with the Calebasse, a distinct fruit.

Fruit, large, pyriform, a little uneven, tapering long and gradually into the stalk.—*Skin*, pretty smooth, dark yellow, a good deal covered with streaks and dots of cinnamon russet, and slightly touched with red on one side.—*Stalk*, one to two inches long, slender, curved.—*Calyx*, short, set in a very shallow basin.—*Flesh*, white, melting, very buttery, with a rich, delicious and slightly perfumed flavor. Ripens gradually from last of September to last of October."—*Fruits and Fruit Trees of America.*

PEARS—Flemish Beauty.

Synonyms—*Belle de Flanders—Beurre Spence—Bosch-Bouche Nouvelle —Bosc Sire—Josephine—Imperatrice de France—Fondante Du Bois.*

The Flemish Beauty seems particularly adapted to the rich warm soils of the West, producing fruit with only ordinary care, equalling specimens



grown East by means of special nurture and extra attention. The best specimens we have ever seen were grown in Wisconsin. "The tree is very luxuriant, and bears early and abundantly: young shoots upright, dark brown. The fruit requires to be gathered sooner than most pears, even before it parts readily from the tree. If it is then ripened in the house it is always fine, while, if allowed to mature on the tree, it usually becomes soft, flavorless, and soon decays.

Fruit, large, oblong, obovate.—*Skin*, a little rough, ground pale yellow, mostly covered with marblings and patches of light russett, becoming reddish brown at maturity on the sunny side.—*Stalk*, rather short, from an inch to an inch and a half long, pretty deeply planted in a peculiar narrow, round cavity.—*Calyx*, short, open, placed in a small round basin.—*Flesh*, yellowish white, not very fine grained, but juicy, melting, very saccharine and rich, with a slight musky flavor."—*Season*, 20th September to 15th October.

WELL DIGGING—A SCIENCE.

Prairie du Chien, Dec. 10, 1852.

My Dear Sir:—Good and wholesome spring water, is not only a desideratum, but is absolutely necessary to human happiness and animal life, and many, otherwise excellent tracts of land, are nearly valueless, because living water is not at command. Of course, anything that will contribute to the discovery of this useful element, will add greatly to the value of such lands, and to the health and comfort of their occupants. No one could have travelled in some portions of our State, in dry seasons, without being convinced of the truth of this remark.

In the western portions of the State, the abundance of the pure spring water, which gushes from the hill-sides, and the head of every ravine, renders well-digging of secondary importance, to what it is in more eastern parts. But still, water is greatly needed very often, even in the west, on higher levels than the usual out-breaking of the springs. And as the country fills up with people, and the spring locations are all pre-occupied, necessity compels the settler to take higher levels, and of course, he is in need of a well. And as the roads are generally laid out on the high, dividing ridges, as far and as long as they can be followed in the right direction; and as not only Yankees, but others, are fond of building on the road, notwithstanding they may have springs in their ravines, from a fourth to half a mile distant, they need wells of water at or near their houses.

In other portions of the State, springs are but "few and far between," and running waters often fail in a drought; so that if wells cannot be dug with success, both man and beast are doomed to suffer from thirst, and the farm, however rich and productive may be the soil, or however near to a market, becomes almost valueless. In all these cases, well-digging is of more importance than gold; for of what avail is gold to a man perishing with thirst? If wells can be obtained, with tolerabe certainty, many portions of our State would admit of more dense settlement, and some portions, now of little value, would be greatly enhanced, both in value and comfort of occupation. This subject, then, is of vital importance to the agricultural interests of the State.

But the question is, who can tell where and how deep to dig for water? To say, to most people, that some men can tell—with a certainty, too, which justifies belief in it—not only as a fact, but as a science, is, with such, only to meet with a contemptuous sneer and incredulous cant of the head. And such unbelievers are often condemned already to do without good and handy water, or obtain it at great expense.

The strong reason offered against this theory is, "We cannot understand it, and we will not believe in a theory we cannot understand." Upon this mode of reasoning, you would believe nothing—not even your own existence. "Facts are stubborn things," is an old adage, and a true one; and the sound sense and philosophy of a man who will deny the truth of a thing because he cannot understand it, is a very questionable matter. To deny one's own senses, is to be bordering upon insanity. The fact here affirmed has been witnessed by thousands who, until they saw it, were unbelievers in it, and the truth of it is being almost daily tested and established. There are, at this time, probably one hundred wells in Western Wisconsin, which were dug by the direction of what is called the "divining rod," the "dowser," the "water witch," or "water philosopher."

This rod consists of a fork taken from the tip ends of the limbs of a peach, hazel, or any fruit-bearing trees, the fruit of which has pits or stones in them. The operator holds the fork in his hands, so that the but-end is upward, and the tips one in each hand—the palms of which being upward and on a level—and when brought over running water, which is in a vein under ground, or over a crevice filled with mineral or mineral clay, the but-end will turn down, and with such force, if resisted by the operator, as to twist the stem and crack the bark. It was this twisting and cracking of the bark that removed my doubts, or rather settled unbelief in the theory some forty years since. And then digging for, and finding water exactly as told by the operator, both as to depth, quality and quantity, I must show symptons of insanity, or yield a full faith in the fact which I saw with my own eyes, and proved by my own hands, in digging, and by my own mouth in the delicious drinks of good cold water, raised from the well.

My own testimony, whatever it may be worth where I am known, is but one among many thousands, a few of which only can be here given, without extending this paper to a greater length than is intended. But having seen it proved in scores of cases, and heard of even hundreds of such, I am and must be a believer in this mode of procuring water, the science of which will be hereafter explained. But I will first give two historical facts to establish the theory.

About the commencement of the present century, Dr. Adam Clark, one of the greatest linguists and philosophers of the age, was stationed on Guernsey Island, in the British Channel, as a Wesleyan Methodist Minister. The people there had suffered much from want of water. But few springs had been discovered; the streams were short, and subject to entire failure from drought; and, as a matter of course, they were dependent upon their cisterns, which often failed also from want of rain. Under these circumstances, the discovery of water at a moderate depth in the soil, or in the rock, was as a God-send to the people.

Dr. Clark found in his Society a man who professed to make this discovery. But not believing in the truth of the profession, because he could not understand the why and wherefore of the thing, he arraigned the member on a charge of humbuggery. He would not allow a member of his Society to humbug the people. The accused man, however, proved by some half dozen reputable witnesses that it was no humbug; that he had told them where to dig, and they had dug and found water as he had told them. This was a poser for the Doctor. He had too much sense, and too great a degree of justice to dispute and deny facts thus clearly proven. But still doubting, he required the operator to perform in his presence. This was done, and the water obtained. But as this might have been a chance case, he would have the experiment renewed, which was done with like success. There now were a score or more wells, of good, living spring water, which were so many standing monuments to the truth of the theory. But how to account for it was the mystery! Science, at that time, had not investigated the matter, and he concluded that it was a merciful and benevolent provision of the Creator, to supply the human race with this very necessary beverage. These facts, and his deductions therefrom, the Doctor published in a pamphlet for the benefit of others, a copy of which fell into my hands some forty years since, and from my recollection of which, I make this statement.

About the same time, last mentioned, I saw a communication from a Quaker in the interior of the State of New York, taken, I think, from the Albany Cultivator, the substance of which was as follows: The writer owned a large farm, under a high state of cultivation, having fine brick buildings, orchards, shrubbery, &c., but no living water. He had dug several wells, some of them ninety feet deep, but no good water could be found, and it being difficult to obtain water from such depths, he became discouraged, and offered his farm for sale at half its value, or cost. A friend of his, on a visit to his house, was admiring the farm, buildings, and other improvements, when the owner informed him of his willingness to sell at half price, for want of water. His friend inquired why he did not dig? "I have;" said the owner, "but no good water can be obtained, and what I do get is at such a depth, that it is costly getting it. "Why don't thee get a water philosopher, to tell thee where to dig?" asked the friend. "Because I don't believe in such nonsense," was the reply. "But thee may believe it, for I can assure thee that a good genuine philosopher can tell thee where to find water; and if thee will get one, and follow his directions, if thee does not find water, I will pay thee all the expenses thereof." Uopn this, the owner, to gratify his friend, agreed to try the experiment. He did so, and was informed by the operator, that water was abundant, within twenty feet of the surface, and near the corner of his house, fixing a mark by which to dig. He paid the operator a dollar, having come some distance, and said to him: "I have done this to please my friend, not because I have any faith in thy skill; But if I find water as thee has said, I will give thee fifty dollars." The well was dug, and water found as indicated; the operator got his fifty dollars, and the farm was valued at double its price three or four days before.

But the reader is probably impatient to know the why and wherefore of this mysterious business—how it is that the rod will work in the hands of one, and not of another. Well, I will say, it is not clairvoyance, mesmerism, spiritual rappings, necromancy, nor any other species of hummbuggery, but simply the laws of electricity; which, when understood, are as plain as the growth of grain or cattle on a farm.

As before stated, this philosophy was practiced on Guernsey Island, from whence it went into France, where the philosophers must always know the why and wherefore of any and every useful fact which occurs within their knowledge. The result of their observations on the subject, as reported in their Transactions, is, in substance, this:

The electric fluid is attracted from the surrounding mass of rock or earth, by running water in its bowels, but not by dead or standing water. Every man is charged with electricity, either positively or negatively; this is a well known fact. The rod used must be green or in the sap.—The sap is a conductor of the fluid, and in the hands of one negatively charged (that is, one to whom the fluid will flow when he comes within the reach or influence of a positively charged body or substance) the rod is attracted towards the current. The reason why it will work in the hands of one, and not in those of another, is thus explained. If all men were negatively charged, it would work in all hands; or, if all were positively charged it would not work in anybody's hands.

It is known that silver will attract the rod, and that, in our mineral region, a crevice in the rock, having in it lead-bearing clay, or soil, will also attract it. And in consequence thereof, the operator cannot tell, in the mineral region, whether it is water, or a lead, or a crevice; the lead here having silver enough in it to become a conductor, and an accumulator of the fluid in the ground.

It is known in the mines of our State, and I believe equally so in all other countries, that lead ore is found mostly in the crevices of openings in the rock. There may be crevices without lead, but seldom is there lead without a crevice. The object, then, of the miner, is to find a crevice, or opening, into which he will dig in pursuit of the ore. To find these crevices, many in the mines use the rod, who find water sometimes as well as a crevice. The skilful miner, however, can form a tolerably correct judgment from the formation of the ground whether it is water or a crevice, which may contain mineral, and so of the skilful well-digger. From experience and observation he forms his opinion whether it is water or mineral substances which attract the rod. But either and both may, and sometimes do, mistake the one for the other in this matter.

In our western part of the State, we have singular dividing ridges. One south of the Wisconsin River, from the Portage to the Mississippi River, 120 miles in length, and which must have in its bowels somewhere near the Portage, as much water as would make a stream, one hundred yards wide and three feet deep, with a current of three or four miles an hour. This bôdy of water must run in a thousand little subterranean streams, because they break out in all levels, from the base of the hill, to within thirty or forty feet of the the top of the ridge, say four hundred feet between the levels of the highest and lowest springs. A similar ridge runs off northeast from Prairie du Chien, dividing the waters of the Mississippi and the Wisconsin Rivers. This ridge runs, probably, one hundred and fifty miles, before it is lost in the general level of the country, and must send out as much, if not more, water, in the form of springs, than the former. Of the truth of this, no one can have a reasonable doubt, if he will look at the map, and note the number and size of the streams which flow from each side of these respective ridges, and reflect that these streams are not supplied from swamps, or lakes, but entirely from springs, which must, and do, issue from the ridges.

Where the reservoirs of these waters are, we know not. The summits of our ridges are higher than the surface of the great lakes, and all the smaller lakes have visible outlets, of sufficient capacity, to discharge their surplus waters. And it is evident, also, that these subterranean streams, probably some of them rivers, must rise and fall in their underground courses. For, at the Portage, the land is several hundred feet lower than the level of thousands of springs, to the south and west of that break in the ridge; and in no place are these ridges wide enough to absorb the rains, and supply the reservoirs within them.

These subterranean streams diverge from the course of the main ridges, because along the sides, and at the base of every spur thereof, springs abound equal to those along the main ridge. The upper or highest veins of water on these high ridges, have been found within thirty-five or forty feet of their top; usually, though not always, in the rock. Near Cassville, springs are found in the clay, at from twenty to thirty feet in depth, on the highest portions of the ridge.

In the more level portions of the State, springs are found in much less abundance than in our hilly portion. But Nature, or rather Nature's God, must have provided those more level portions with subterranean waters, though they do not show themselves, for the want of hill-sides, out of which to seek the light of day. The great question is, how are these waters to be reached, and brought to the surface for man's use. It would not be too much to assert that if the Creator of the Earth, with all these streams of water in it, so necessary for man's use, has not provided by some law of Nature for their discovery, then there would be a defect in His work. For, to provide an ample supply for the wants of man, but not to provide any means but a mere blind chance to discover that supply, is, to say the least of it, not skilful management. It would be but tantalizing man in his wants, to assure him, as we all know is the case, that abundant streams of water run under ground, but at the same time leave him in total darkness as to the means of procuring it. The reasonableness of such a provision, raises a strong presumption that it is made, and the facts hereinbefore stated, show how and in what way it is made.

Unbelievers in this theory and practice, have usually paid the penalty of their sin, in the enormous expenses they are at in obtaining water. Some, to be sure, may and do hit water at hap-hazard; but others, upon an average, miss it, and dig for nothing, probably four times out of five. A friend of mine, of Grant county, to gratify me, obtained direction from three or four different "water-philosophers," at different times, and each unknown to the other; and all fixed upon the same spot, within thirty feet of his door, and less than forty feet from the surface. But being an unbeliever in this theory, he could not be induced to dig in that place, but went some ten rods from the house, into the head of a ravine, at a level of some twenty feet lower than the one indicated, and sunk a well about seventy feet, being at least twenty feet below the level of his spring, which broke out about one hundred rods down the ravine, and at an expense of probably one hundred and fifty dollars; yet he got no water. He then obtained a hydraulic ram and lead pipe, by which the water of his spring is forced up hill, eighty-four feet in a distance of one hundred rods, being yet ten rods from the house, and at an expense, including his own labor, of at least $200. Here is one case of hundreds, who after hauling the water half a mile, for ten or fifteen years, will spend three or four hundred dollars to obtain the element, when fifty dollars might, and would, in most cases, procure it at or near the door; and all this, because men will not believe in a matter which has been tested and proved by thousands; and that, too, for the unphilosophical reason that they "do not understand it."

The Artesian wells, now becoming so numerous in our State, are, I believe, usually bored without any respect to the theory here advocated, and so far as I have been informed, they are usually sunk far below the level at which springs are known to break out. If, perchance, the drill strikes a vein, the well may be used without going to so great a depth. Last season, three Artesian wells were sunk in Mineral Point, within a few rods of each other; and all, I believe, to twice the depth of never-failing wells, within a short distance of them.

In crossing the Koshkonong prairie, I saw three Artesian wells which were said to be from seventy to one hundred and thirty feet deep; and at the deepest one I attempted to drink, but the water was so poor that I preferred common brook water to it. And yet I found some good wells of but few feet depth in the same neighborhood, proving that water must run in veins in that prairie, and can be obtained at less expense and trouble, and of a better quality, if proper means are used.

The Artesian wells at Fond du Lac, I believe, are generally about one hundred feet deep, and probably sixty or eighty feet below the surface of Lake Winnebago. These wells, or most of them, being tubed, throw out the water at the surface, but in streams of very different magnitude. One which I saw, emitted a stream nearly as large as my arm, while another could afford only enough to say that it run; and I was informed that in sinking some of these wells, others were caused to fail. There must be veins of water under the plat of that thriving city, and at a much higher level than those that supply their deep wells; because springs break out in the neighborhood, near the surface of that extended and beautiful plain. But the country is so level that they have no chance to show themselves, except in the river's bank, or some slight ravine running into them; and when these veins can be struck, wells can be obtained at much less expense than by these Artesian concerns. These wells must be supplied by veins fed by reservoirs as high, or higher, than the surface of the town; but where, is a question which we do not pretend to answer.

In our lead mines, shafts have been sunk to different depths before water has come in so as to disturb the miner. Some shafts are sunk one hundred and twenty feet or more, without water; while others are flooded at thirty, forty or fifty feet depth. And in some instances, the distances between shafts, with and without water, is very short, but a few feet. Yet, some miners will have it that, at one common depth below the surface, water will be found.

The course of these veins in the bowels of the earth, is somewhat analagous to the blood veins of animals; they rise and fall, and swerve to the right and left. The whole of the veins in the ridge running east and south of the Wisconsin river must have a deep depression to pass the low land at the Portage, and rise again some three or four hundred feet south and west of it; because springs break out in numerous places at levels of that height above the Portage, to the south and west of it. Indeed, it is said that springs come out near the top of the Blue Mounds, nearly one thousand feet higher than the Portage.

In an early part of the present century, a man living near the Housitonac river, in Massachusetts, dug himself a well, sinking some feet into the rock. Some time after, his neighbor, half a mile distant, and on the opposite side of the river, (the bed of which was at least one hundred feet below the common level of the two houses) dug a well, and drilling into the rock, he struck the vein which supplied the first well. The first well became dry, while the water rose to the surface of the second, and run off to the river. Well No. 2 was plugged, the water bailed out, and the wall built. During this process the water rose as usual in well No. 1; but as soon as the wall was built, and the plug removed from the rock in the bottom of well No. 2, well No. 1 went dry again. The matter being thus settled, that the same vein furnished both wells, a compromise was effected by partially plugging No. 2, leaving the remainder of the water to pass on to No. 1. Whether, if No. 2 had used, or rather suffered the whole of the water to rise and run off, it would have been "turning water out of the natural course," and thus become a subject of litigation, I leave others to settle.

One thing which I omitted in its proper place I will mention here—that is, how to ascertain the depth of the vein of water. I believe it is an established and admitted fact that the electric fluid can and will be attracted at an angle of 45° with the horizon, and from a distance of from fifty to seventy feet. This, if I am not mistaken, is the rule expected to govern in reference to "lightning rods." And this is the rule in reference to water in the ground. When the operator ascertains the perpendicular attraction, he makes his mark, and then, retreating beyond the influence of the attraction, approaches until the attraction takes effect, and the distance from that point to the perpendicular point, shows the depth to be dug to obtain water.

One thing more, and I shall have done. A query has been raised, whether those persons, who are but negatively charged with electricity, are more liable to be struck by lightning than those who are positively charged; in short, whether one who is, or can be an operator, is more exposed than one who is not. As to this, I know nothing, and therefore can say nothing. By reasoning from analogy, it would seem to favor the idea of more danger to the operator than to others. But I know of no facts that would settle the question. It is known that persons have been struck by this fluid, while others in company with them, were not hurt. But whether the reason here suggested, was the real cause of the difference, has not, to my knowledge, been ascertained. It could be, by ascertaining the characters of the different parties, to such a distinction. I have known of but one person being struck by the fluid, who was an operator, and he had a shovel in his hand at the time, which might have attracted the fluid. The fluid struck the man first, glanced to the shovel, and passed off, and the man yet lives. The fluid, undoubtedly, had greater affinity for the shovel than for the man, or it would not have left the one for the other. But whether it would have touched the man, or not, if he had not had the shovel in his hand, is very doubtful. I think operators, in this matter, need borrow no trouble, or spend no sleepless nights.

Respectfully, your obedient servant,

ALFRED BRUNSON.

To Albert C. Ingham, Esq.
Sec. of the Wis. State Agr. Society.

THE MECHANICAL AND MANUFACTURING ARTS, THEIR CONDITION AND WANTS, AND THE RELATION THEY SUSTAIN TO THE STATE AGRICULTURAL SOCIETY.

Rochester, Wis., December, 1852.

Dear Sir:—I received your letter some time since, requesting me to prepare a paper for insertion in the second volume of the Transactions of the State Agricultural Society, and suggesting as a subject, "The Mechanical and Manufacturing Interests of Wisconsin, their present condition and wants, and the relations they should and do sustain to the State Agricultural Society, and their duty in relation thereto."

To treat this subject properly, statistics, gathered carefully from good sources, would be indispensable. After failing to carry out the plan for obtaining such, which first suggested itself, I thought I should be able to obtain from some recent work on Wisconsin, or from the United States Census, the information desired, but have been unable to reach anything of the kind by any inquiry I have instituted, and I shall, therefore, be compelled to substitute a few general observations:

In the older portions of our State, the mechanic arts, in many departments, are in a fair state of advancement. In our large towns and cities, will be found dwellings, stores, and public edifices, which in taste, and in architectural style and finish, will compare well with similar edifices in any part of the Union. Our principal commercial city, Milwaukee, probably cannot be excelled in the rare taste and beauty of many of her business blocks—unrivalled in the richness of the material—those bricks of world-wide fame, and seldom surpassed in the magnificent and tasteful proportions of their architecture. Again, if we travel through our older farming districts, we are struck with the frequency of farm dwellings of neat and tasteful, and frequently of rich finish, indicating by their external outlines, a convenience of internal arrangement. We think no country is in advance of Wisconsin in this particular. Lands lovely as the sun shines upon, and buildings often which show the taste of the occupant, apace with the natural influences which surround him. No huge pile reared towards the close of life's struggle, as a vain monument of an existence which has been spent in restraining the comforts of progeny, now scattered over the earth; but homes of reasonable proportions, which look like shelter for loved ones, calculated to mould their tastes, and multiply their enjoyments.

In most of the towns and villages of Wisconsin we find the common mechanic arts respectably represented, and new branches of mechanical pursuits are from year to year being introduced. Many branches of manufactures, allied to the earliest wants of a new country, the productions of which are not conveniently transported from other parts, are in a course of successful and extensive operation. Of these may be named as prominent, Iron Foundries and Machine Shops, and manufactories of some kinds of agricultural implements and machines. Already we hear that some of the former have commenced the manufacture of Rail Road Locomotives, and will no doubt be able to supply the great prospective demand of the country in that line. Steam engines are manufactured by different establishments now in operation. An excellent specimen of this manufacture was on exhibition by Messrs. Turton & Sercomb, of Milwaukee, at the late State Fair. We allude specifically to these mechanical productions, because we suppose they indicate, as much as any particular instances can, the capacity and the advancement of the mechanical skill of the country. The greatest deficiency in the manufacturing departments of our State, with the least prospect of the deficiency being soon adequately filled, appears to me to be in the manufacture of every kind of cloth fabrics. I will not undertake to speculate upon the causes of this deficiency in a class of manufactures so intimately connected with the every-day necessities of the country, and the absence of which occasions such a constant and heavy drain of money from our State. We can but hope that inducements may appear for investment in this direction, and that facilities may be put in operation for the manufacture of the increasing amount of raw material raised within our borders.

The hard times with our farmers for the last few years, have had a tendency, very much, to depress all branches, but the change within the last year, in crops and prices, is having a marked effect in stimulating mechanical industry. We see hope arising, and the anticipations and calculations of the mechanic enlarging. In this, we trust, there is permanency, which will insure to the mechanical and manufacturing interests, a great advance in our State for a few years to come. We not only hope to see those branches, already established, advanced, but there are many manufactures for which the State pays heavily to other countries, the manufacture of which we hope to see established among us; and trust, that as our agricultural interests flourish, we shall see the whole list of manufacturing occupations, capable of being introduced among us, filled up, and adequate, at least, to meet the wants of the State. In spite of any notions of political economy, which may militate against it, we cannot help supposing, with our superficial views, that it is best for a country to raise its own fruit, to make its own cheese, and manufacture, as far as possible, all its necessaries in implements, machines, and fabrics. Our ideal of a great and prosperous country, combines the picture of towns and villages interspersed here and there, merry with the anvil's ring, the hammer's resound, and the general hum of industry, their domes "glittering in the sun," and spires to heaven pointing; while agriculture weaves around its broad belt of well tilled fields, and displays its abundant crops and smiling herds, and rears its happy homes. In order to afford something of a realization of this picture, our own mechanics and manufacturers need the friendly interest, the fostering care of our own communities, and not to be regarded with jealousy or neglect. The agricultural and mechanical interests of the country, should feel that their interests are mutual; that the general prosperity of the country, in which all have a common interest, is dependent in a good degree upon the mutual confidence and good will of all interests. The incipient attempts at the introduction of new branches of manufacture, should be regarded everywhere with favor, and preference given to home productions. Is it not safe to say, that whatever retains the means of the country in the country, multiplies its capital, and strengthens the sinews of general enterprise and prosperity?

A State, after all, is but a great family, and the improvement and thrift of the different industrial interests are for the benefit of the whole. An enlightened view should lead the farmer to encourage home mechanics and manufacturers—to wish for their prosperity—to bear with imperfect beginnings, and sustain and encourage to improvement. The mechanic and the manufacturer, and the merchant, and the capitalist, should endeavor to conduct their pursuits on such principles as will conduce, as far as possible, to the benefit of the farming interests—to the advancement of the communities in which they live, and of the whole country; at the same time that each interest reaps its own proper emolument and reward. Let these principles prevail in Wisconsin, and we shall see, with the anticipated improvement in financial matters, the increase of money in the State, manufactories arising, and the increase and prosperity of all the essential pursuits of industry.

From the views presented, it is not difficult to deduce the relation which our mechanical and manufacturing interests "should and do sustain to the State Agricultural Society." Were Agricultural Associations instituted for the benefit of the farmer alone, even then the dependence, in a State like ours, of every other interest, in a great degree, upon the prosperity of the agricultural interest, should lead every other calling, industrial or professional, to aid in the upbuilding of such associations—to encourage and help sustain agricultural publications, as well as everything that is calculated to improve and advance the interests of agriculture. But Agricultural Associations are every where founded upon the principle of the intimate relations of all the industrial pursuits, which I have argued, upon the principle that these pursuits have a blended interest, a mutual dependence, hopes in common, and common incentives to improvement. In most State and County Societies over the Union, the advancement of the interests of the artizan are embraced in their objects and operations. Such is particularly the case with the Wisconsin State Agricultural Society, which invites the co-operation of every class of industry, in all its doings and objects, and has an equal eye to agricultural and artizan improvement and progress. Such being the case, the relation of artizan industry to this Society needs no further elucidation. This relation becomes clear, and the duty it imposes becomes clear and imperative. That duty—is it not to grasp the hand of brotherhood extended by agriculture, and help, by our exertions and every requisite aid, to accomplish the objects for which the State Agricultural Society labors? Should not the mechanic and manufacturer in every part of our State enlist with the farmer in this Association intended for their mutual benefit; aid the funds of the Society by their fees of membership, and contribute to its periodical exhibitions articles of utility or skill?

If the mechanics and manufacturers of the State will turn out to these annual gatherings, they will ever make an occasion of interest and profit—profit in the new incentives they will gather from what they will see, and in the acquaintance they will increase—profit in the self-respect with which such great gala-days of industry will not fail to inspire the industrial classes, and in the respect which will be impressed upon other classes for industrial pursuits.

We hope that at our next Annual Fair, mechanics and manufacturers will be there from all quarters, with displays of their skill, emulous to excel and to carry away the prize of excellence by every fair and honorable exertion, in the spirit of that brotherhood which should exist as well between individuals of the same pursuit, as between the different pursuits of life.

With these very imperfect thoughts on the subject proposed, Mr. Secretary, thrown together very hastily and amid interruptions, I have attempted to fulfil the duty assigned me. I only wish that time and circumstances had enabled me to prepare something more worthy of your volume.

I remain, most respectfully yours,

RICHARD E. ELA.

To Albert C. Ingham, Esq.,

Sec. of the Wis. State Agr. Society.

NORTHERN WISCONSIN—ITS CAPACITIES AND ITS WANTS.

Stevens' Point, Portage Co., Wis., December, 1852.

Sir—With much hesitancy, I attempt the task imposed on me in your note of 8th Nov. last, to give a "general description of the northern and unsettled portion of this State, and its capabilities for sustaining an agricultural population." I must reiterate the hope expressed in my note of the 20th ultimo, that you will not rely on me alone, to set forth the important information required.

Four principal inquiries seem to be embraced in your letter, to wit:

1. The general geographical and physical formation of the country.
2. Its adaptation to farming purposes generally, and its prospects for becoming a settled and self sustaining region.
3. Its principal points.
4. Its present wants.

In speaking of Northern Wisconsin, reference will be made to that part north of Town 24 of the public land surveys. It is situated between parallels 44° 30′ and 46° 40′ N. latitude, and 87° 30′ and 93° West longitude. It is about 120 miles in width from N. to S.; 270 miles long from E. to W., and includes an area of more than 40,000 square miles. The settlements are extended in many instances much above Town 24; though some small portions remain (between the Wisconsin and Mississippi rivers,) south of this boundary, not yet penetrated by the pioneer.

Northern Wisconsin, though rolling and even hilly, is by no means a mountainous country; a traveler in passing from Galena to the mouth of the Montreal river of Lake Superior, or from Green Bay to St. Paul on the Mississippi, would never have the idea of a mountain range brought to mind. Its most remarkable features are constituted by its Lakes and Rivers. Whenever it shall be all surveyed and accurately mapped out, it will exhibit countless numbers of small Lakes covering its northern part; this "Region of the Lakes," lies east and west from about range 15 E., (of the surveys) to the western boundary of the State; and forms the sources of the rivers falling into Lake Superior and Green Bay on the N. and E., and into the Mississippi on the S. W. This district of the Lakes is some fifty miles in width, and more than one hundred and fifty miles in length; and constitutes what the geologists have named the "great water shed," from which those great rivers draw their constant supply. The principles upon which this great reservoir is maintained, at an elevation of many hundred feet above the level of Lake Superior, always full, never failing in drought, heat or frost, it belongs to the science of Geology to explain. The great fact is a prominent one in the geographical features of this part of the State, and is interesting in more points than one, and particularly as touching its climate.

Some of the principal rivers, having their sources in this "Region of the Lakes," are the Montreal and the Ontonagon, falling into Lake Superior; the Menomonee, and the Wolf (a north branch of the Fox) falling into Green Bay, and the Wisconsin, the Chippewa and the St. Croix, falling into the Mississippi, (St. Louis River, at Fond du Lac, off Lake Superior, has its source in a distinct region, to the N. W. of that Lake; and the Black River rises some twenty or thirty miles south of the "Region of the Lakes.") Four of these rivers, to wit: the Menomonee, the Wolf, the Wisconsin and the Chippewa, rise within a very few miles of each other, in and near the "Lake of the Desert," and water, in their courses, four-fifths of the entire State. Though, but slightly known towards their heads, to the white men, they have, for ages past, constituted the highways of the natives, and of those engaged in trade and commerce with them. To attempt a detailed description of the immense country north of town 24, and watered by these rivers and lakes, would involve a degree of research and labor quite out of the question in this communication; a few discursory remarks, only, will be attempted.

It is to be regretted that where knowledge does not exist, fancy is too often allowed to take its place, and give form and character to matters under discussion. With this impulse, grave and important subjects are often summarily disposed of with a single dash of the pen. Not many years since, a government officer made a formal report to the War Department, setting forth that the whole Peninsula of Michigan was an impassable swamp! and a map was made and published in accordance with that report! This Michigan swamp has disappeared before the tide of immigration; but the propensities to indulge the imagination are not cured. An official, of later times, has given a similar character to a large portion of Wisconsin. Time and the progress of the "Yankee Nation" will doubtless drain this Wisconsin swamp as it did that of Michigan.

The Indian title is extinguished, I believe, to all the land in the State except a small reserve to the Oneidas, near Green Bay, and the public surveys are progressing with great rapidity. To them we are mainly indebted for all we know of the country.

The rivers before named traverse and expose a great variety of soil; their banks, and those of most of their tributaries, are clothed with the evergreen timbers, the white pine prevailing. The settlements have, hitherto, ascended the streams, mostly in quest of the pine—lumbering being the chief incentive thus far—to the penetration of the forests. The energy with which this business has been prosecuted for the last ten years, has opened the country up these several streams for hundreds of miles. A heavy business is done on all the tributaries of Green Bay; up the Wolf, the lumbermen have opened as high as town 28; on the Wisconsin, to town 30; on the Black river, to town 28; up the Chippewa (and one of its tributaries, the Red Cedar,) to town 30; and up the St. Croix, to Kettle river.

I have no means of estimating with any accuracy the amount of capital invested in this trade, or the quantity of the annual product. The vast extent of prairie country, in all Illinois, Iowa, and a great part of Missouri, are wholly dependent on Northern Wisconsin for pine boards.

A general notion seems to prevail, that the lands of these pineries are only valuable for their timber, and that it never can become an agricultural district. But the facts are otherwise. Whoever recollects Western New York, as it was forty years ago, may have a very good idea of Northern Wisconsin as it now is; and whoever sees Wisconsin forty years hence, may behold its prototype in Western New York at this moment.

That Northern Wisconsin is destined to become an agricultural country, of the first character, not only "self sustaining" but sending off immense surplus products, is, not only apparent from its formation generally, but is daily being shadowed forth by experimental facts. Not every man in these pineries is engaged in lumbering; many are already proving up the capabilities of the soil and climate, by actual farming operations, every effort at which, is repaying the outlay of labor, and fortifying the essayist in his hopes of ultimate success. It must not be forgotten, that but a small portion, comparatively speaking, of this immense region, known as bearing the evergreen timbers, such as the pine, hemlock, &c., is, in fact, clothed with these timbers; nearly all the ridges lying a short distance back from the streams, are clothed with the several varieties of hard timber—the sugar tree, bass, oak, hickory, ash, &c. It is estimated that about one-fifth of these forests is occupied by pine; two-fifths with sugar, oak, bass, hickory, &c., and two-fifths with tamarack, cedar, alder, black ash, white maple, and aspen.

The lumbering business will doubtless take the lead, on and along these rivers for many years; but whenever the pine shall be exhausted, or lumber cease to bear remunerative prices, the more arable lands will be called into requisition, for agricultural purposes, and sustain a more dense population than any country of prairie and openings can do. In fact, as before remarked, the two pursuits are already thriving to some extent side by side in immediate proximity; many men finding it quite as profitable to raise grain, grasses and potatoes, with which to furnish those felling the pine forests, as to manufacture boards. Did time and space permit, this position could be verified by facts in detail, by citing numerous instances of farms that have been opened in the heart of the lumbering districts, on the Menomonee, Peshitigo, Oconto, Wolf, Wisconsin, Chippewa and St. Croix Rivers, all of which have been attended with abundant success.

Much has been said about the "sand barrens" of Wisconsin. They lie between the upper Fox and the Wisconsin, near Fort Winnebago, and stretching off north-westerly, parallel with the Mississippi and some twenty miles from it, as far as the St. Croix. The district is generally about twenty miles in width, and some one hundred miles in length, and seems composed of what the geologists call *drift*, being the debris of sand rock, decomposed by the action of the elements in former ages, and carried down from the north-easterly regions by currents of water. This kind of land has been supposed entirely worthless for all purposes of agriculture. Of that part north-west of the river Wisconsin, little is known or proved as to its soils. It may be as poor as the geologists would have us believe. But it is to be remembered, that the portion of it lying between the Wisconsin and the Fox rivers, constitutes a part of the famous "Indian Land" district, which has been sought with so much avidity, during the past season, by experienced farmers from the older States.

I have, thus far, been commenting, in the main, on that portion of northern Wisconsin watered by the several rivers before mentioned, and lying below (south) of the "Region of the Lakes." The great "water shed" merits a separate consideration. As before remarked, it is about 50 miles in width, and some 150 miles in length, and will, at some future day, assume an importance in the geographical and physical features of the State now but little suspected. It is dotted over with thousands of lakes, from twenty rods to as many miles in diameter,—water clear, shores bold, filled with fine fish, abounding with water-fowl, and matchless in picturesque scenery and beautiful locations. Most of them have inlet and outlet of fine streams, while others have neither.

Let not the reader be startled with visions of eternal snows and rigors of climate; for, if correctly considered, the temperature of the Lake Region will be judged more mild than that of the next hundred miles south of it.

A mistaken notion seems to have prevailed with regard to climate, which has been too generally referred to latitude, and confounded with it; just as though the same parallels east and west necessarily always had the same degree of cold or heat. This error is now being dissipated, and climate is known to be governed by many other causes than mere latitude. Topography—geological features—go far to modify the temperature and affect the seasons; among all which, it is found that bodies of water, especially small lakes, have an influence in softening, to an extraordinary degree, a climate otherwise rigorous. Such is known to be exactly the effect in the Lake Region under consideration, and eminently so in the autumnal season.

The natives, with the sagacity of their race, made these little seas their resting places, having their villages both for summer and winter on their borders, while a large district south of them has only been used for hunting grounds. The early traveler, whether penetrating from Lake Superior, or from the lower Wisconsin and Mississippi, has always found inhabitants in the Lake Region, and been surprised to find there fields of corn, beans, potatoes, &c., which, to use the words of one of them, were "better indeed than are usually grown with all the aid of cultivation in the valley of the Ohio."—*Atwood's Geological Report, p.* 57.

Northern Wisconsin, then, as considered with regard to soil, climate, health, accessibility and markets, may be set down, in general terms, as bidding fair to become a farming country, not only "self sustaining," but producing a large surplusage for exportation. Those portions just being opened, will be the first to be settled; but the last district named, the "Region of the Lakes," will finally become the favorite.

The whole is a timbered country, prairies and openings being so few and far between, as to form exceptions to the general rule. The class of settlers, therefore, who seek the great West to find farms "already cleared to hand," will not be likely to locate in Northern Wisconsin, till they have essayed the prairies, and there made the discovery, that the bounties of Providence are nearly equally distributed over the great west; and that, what is to be had without toil, is seldom worth the possession. Our immigration will come, as it has in fact thus far, from the more Northern of the older States, the character of which, needs no eulogy from me.

Nor has so desirable a region escaped attention. The Indian title is all extinguished; the United States surveys are progressing over it with great rapidity. Men of enterprise and forecast are becoming sensible of its future destined greatness; explorations of it are being made; the eyes of capitalists are scanning it closely, evidenced in the fact that already three or four most important railways are proposed through it, to wit: one from Milwaukee *via* Portage City to La Crosse; one from Madison (a continuation of the Chicago and Beloit Railroad,) up the valley of the Wisconsin, to Ontonagon of Lake Superior; one from Fond du Lac, (a continuation of the R. R. U. V. Railroad,) up the valley of the Wolf, to Lake Superior; and one from Green Bay west to St. Paul. These roads are eminently practicable, and if constructed, would, no doubt, be remunerative on the capital invested. Indeed, from the zeal and confidence manifested by the several projectors, there is good reason to presume it not utopian to look for their early completion.

You inquire for the "prominent points in Northern Wisconsin."

But few are known as yet. Green Bay, Muckwau, Waupacca, Stevens' Point, Plover, and La Crosse, are in its southern border; though none of them, except Green Bay and Stevens' Point, are within the boundaries I have named for this part of Wisconsin. Settlements north of town 24, exists as follows: on the tributaries of Green Bay, at Oconto, Peshitigo and Menomonee rivers; on the Wolf River at Lake Shawauno; on the Wisconsin, are the Little Bull Falls village, in town 28; Big Bull Falls, (otherwise called Wausau, the seat of justice for Marathon Co.,) in town 29; besides several mill locations higher up, as at Pine

River and Virgin Falls, in town 31. I cannot give the locations with accuracy on the Black River, the Chippewa and the St. Croix, though it is known, several fine villages are thriving on those streams.

But it is hardly probable the prominent points, *in futuro*, are yet reached in this vast region; and when they shall be, they will rise in that most interesting country, the "Lake Region," and take position on the banks of the "Lake of the Desert," Lake Flambeaux," Lake Courtoreilles," and "Long Lake."

You demand to know its present wants!

What it needs first is, to be made known. 2d. To have thoroughfares opened through it. And third, and most essentially, it wants a just and liberal policy maintained towards it on the part of both the State and National Governments.

The State Agricultural Society can do much towards the first of these objects; and I trust you will not be discouraged by the feeble effort of this present paper, from soliciting treatises in future from more competent pens.

In regard to thoroughfares, I will observe, the people of Green Bay are about to petition Congress for a donation of the Public Lands, for the purpose of aiding in the construction of a railway from that town to St. Paul. Their efforts should be received with favor and helped forward by every well wisher of the North.

The proposition of the Chicago Railway Company, should be entertained in a spirit of liberality by the people of this State. Lake Superior is bound to find connexion with New York, sooner or later, *via* Chicago.

A just and liberal policy from the State and National Governments.

A part of this, so far as relates to the National Government, has been hinted at in the proposed grant of Public Lands to aid in the construction of railroads. The numberless other modes in which such questions may be raised between us and that Government, can hardly be anticipated. There is one question, however, which being already forced upon us, I beg leave to notice in this connection.

Our exertions have, hitherto, been earnestly directed towards the extinguishment of the Indian title, and the clearing of our territory of those tribes. To our petitions the General Government made prompt response, apparently in good faith. The treaty of 1848 with the

Menominee Indians, which was early ratified by the Senate, gave us the last Indian reservation; and with it an earnest that the northern part of Wisconsin would be speedly opened to the wants of settlers, and that the tribe making the cession would long before this time have left our borders. This just expectation has, however, been defeated. It is a question, pertinent to the citizen, and one which demands the profound attention of the Legislative and Executive Departments of the State, why has the law of the land—the Treaty of 1848, not been complied with, and the Menomonee Indians removed to Crow Wing River? And further, by what authority, and in pursuance of what and whose policy is it now attempted to recede twelve townships of the most valuable part of that cession back to that tribe, and to locate and re-establish them at Lake Shawauno? It is respectfully submitted for the consideration of the law makers and the Executive Authority of the State, whether, on the ratification of the treaty with the Menominee Indians of October, 1848, by the Senate of the United States, the jurisdiction of Wisconsin did not immediately become complete over all the country described in that cession? And if so, what authority, short of that of this State, can undertake to locate an Indian tribe within its borders?

Such, however, has been attempted by the Agents of the Indian Department; a tract of twelve townships of the best land in the State has been attempted to be set off near Lake Shawauno, on the Wolf river, as a home for the Menominee Indians, in violation of the rights of many of our citizens—of solemn treaty stipulation—of the jurisdiction of the State of Wisconsin—besides being all a fraud on the poor Indians themselves, who it is manifest can have no permanent resting place there; our settlements, having already, since the ratification of the treaty, preceded the pretended reservation!

Northern Wisconsin is deeply injured by this proceeding, and wishes her Government to protect itself from insult, and its citizens, whether many or few in number, from this wrong attempted to be inflicted on them in the name of the United States Indian Department.

In the foregoing, allusion is had to the policy of the National Government. I now beg leave to speak of some acts and doings of our local State Government.

It is the plain duty of every Government, to protect the weak as well as the strong; indeed, the strong being able to protect themselves, Governments are instituted, in this republican country at least, for the express purpose of protecting the weak. When they forget this, and lend their omnipotence to aid the more powerful part of the body politic, to wrong and oppress the weaker, they become nuisances, a curse instead of a blessing, and forfeit all claim to the respect of mankind.

I beg leave to look back a little in our history. On the admission of Illinois into the Union, her politicians plead to have her northern boundary placed at 42° 30′ N. It was objected to this, that the Ordinance of 1787, for the government of the Territory N. W. of the River Ohio, provided that her Northern boundary should be a line E. and W., drawn through the southerly bend of Lake Michigan. The objection was overruled, and she was admitted, with her northern boundary as she desired. The friends of Wisconsin, (for she had few inhabitants at that time within her borders) saw a violation of her rights, murmured their disapprobation, and the matter passed on, with a loss to Wisconsin of nearly eight thousand square miles, from off her southern border.

Next came the admission of Michigan, with her contest with Ohio about boundary, which all but involved the two States in bloodshed and civil war. Wisconsin was still nearly unable to be heard in the great councils of the nation; though one magnanimous voice proclaimed her rights.* But she had no representation, much less any votes. To appease the unrighteous thirst for dominion on the part of Ohio, her boundaries, as established by the Ordinance of 1787, were again violated; and as a compensation to Michigan for the robbery on her by the former State, one-fifth part of the balance of our Territory was sliced off on the N. E. and handed over to Michigan. To this outrage we submitted with impatience, and justly complained of the high handed robbery, as a ruthless disregard of its sacred obligations on the part of Congress. But submit we were compelled to, being without the power of resistance. We comforted ourselves, however, as well as we could with the reflection, that though we had lost our rights, our honor remained, and that on attaining our majority, we would take good care to make ourselves heard and respected in the National Councils.

At length the time came for our own admission to the great confederacy, which was done with our boundaries including what the rapacity of our older and stronger sisters had left us; our fair proportions, though

* The late Hon. John Quincy Adams.

curtailed at both extremities, were yet regarded such as might still enable us to command a respectable rank in the great republican family.

Well, we regarded the question of boundary, which had given us so much trouble and alarm, as finally put forever at rest; and we went on in earnest, to settle up and improve our fair domain, with a view to future greatness as well as immediate convenience. But in the short space of four years, before we have fairly composed our minds and become quiet of our apprehensions from without, a new project of dismemberment rises up from within; so strange and startling is the proposition, that but few of our citizens can believe it real, but are disposed to regard it as some poor hoax, got up by grave legislators in a leisure moment, during a dearth of legitimate business, or while awaiting perhaps the action of the Executive on Bills which their greater industry had presented for his consideration. But I regret to say no such charitable excuse can be plead for our Solons. Their proposition to violate the integrity of our boundaries stands on record, in the form of a grave legislative act, entitled, "*Joint Resolution in relation to the erection of the Territory of Superior.*" Then follows the Resolve, that the assent of Wisconsin "is hereby given" to the dismemberment of the State! and that fully one half of it may be set off into a distinct Territorial Government, to wit: all north of Town 30, and west of Range 10 N. of the Meridian.

The question has been asked, "where did this scheme originate?"—Though difficult to trace its paternity, it is easy to say where it did not come from, and that is, it did not originate with the people.

But the assent of Wisconsin "is given," that the best half of the State may be "set off." Now it is generally supposed that boundaries constitute a part—a most essential part of our Constitution. Has our Constitution been changed—amended? If so, when, where, and how? and if not, by what authority has the Legislature undertaken to give the "assent" of the people of this State to a sundering of it in the midst?

As for the people of Northern Wisconsin, they regard the proposition with disapprobation, and concern; its consummation would be their ruin. They are told that the interest of the northern and southern portion of the State are "so diverse!" Indeed! and suppose they should be so, what State in this Union, of respectable dimensions, but has diverse interests? The argument is too insignificant to merit pursuit. The whole scheme is liable to a construction, not greatly to the honor of the originators for magnanimity of feeling, or for that just state pride which ought to swell the bosom of every man worthy of a seat in our Legislative Halls.

Among the present wants of Northern Wisconsin, this project certainiy is not one, nor can it be regarded otherwise than as antagonistical to that just and liberal policy towards us, which I have spoken of, and which, as pioneers of the wilderness, in the van of civilization, we have a right to expect and demand.

I am, Sir, with great respect,
Your obedient servant,
ALBERT G. ELLIS.

To Albert C. Ingham, Esq.
Sec. of the Wis. State Agr. Society.

FAUNA AND FLORA OF WISCONSIN.

The following Catalogues, prepared at the request of Albert C. Ingham, Esq., the Secretary of the Wisconsin State Agricultural Society, include the Animals, the Fossils in the rocks, and the Plants, heretofore observed in that State. They are very far from being complete lists of our Fauna and Flora, only such species having been included as have been actually observed by me, or were communicated to me by competent persons. A few species are added on the authority of naturalists who have formerly visited this country. They embrace 62 Mammals, 287 Birds, 19 Reptiles, 14 Fishes, 90 Mollusks, 92 Fossils, and 949 Plants.

I. A. LAPHAM.

A SYSTEMATIC CATALOGUE OF THE ANIMALS OF WISCONSIN,

PREPARED FOR THE WISCONSIN STATE AGRICULTURAL SOCIETY,
BY I. A. LAPHAM, OF MILWAUKEE, 1852.

MAMMALIA.

ORDER CARNIVORA.

Didelphus, Linn.
Virginiana, Pennant. Oppossum. Green County. (Dr. Hoy.)

Vespertilio, Linn. The Bat.
*Noveboracensis, Linn. New York Bat. Milwaukee.
pruinosus, Say. Hoary Bat. Racine. †
*subulatus, Say. Little Brown Bat. Racine.
*noctivagans, Le Conte. Silver Haired Bat. Racine.

† The species marked Racine were observed near that place, and communicated to me by Dr. P. R. Hoy.

* The specimens of the species marked thus (*) are preserved in the Collection of the Nat. Hist. Association, at Madison.

CONDYLURA, Illiger.
*cristata, Linn. Star-nose Mole. Milwaukee.

SCALOPS, Cuvier.
aquaticus, De Kay, (Sorex aquaticus, Linn.) Common Shrew Mole. Racine.

SOREX, Linn.
Dekayi, Backman. Dekay's Shrew. Racine.
Forsteri, Richardson. Forster's Shrew. Racine.
brevicaudus, Say. Short-tailed Shrew. Milwaukee.
Richardsonii Backman. North West Territory. (Mr. De Kay.)
Cooperi Bachman. North West Territory. (Mr. De Kay.)

URSUS, Linn. The Bear.
*Americanus, Pallas. Black Bear. Milwaukee.

PROCYON, Storr.
*lotor, Linn. Raccoon. Milwaukee.

MELES, Brisson.
Labradoria, Sabine. Badger. Milwaukee.

GULO, Storr.
*luscus, Linn. Wolverine. North West Territory. (Mr. Say.)†

MEPHITIS, Cuvier.
Americana, Desmarest. Skunk. Milwaukee.

MUSTELA, Cuvier.
Canadénsis, Linn. Fisher. Milwaukee and Watertown.
*martes, Linn. Marten. North West Territory. (Mr. Say.)
pusilla, Dekay. Little Weasel. Racine.

PUTORIUS, Cuvier.
*Noveboracensis. Ermine Weasle, North West Territory. (Mr. Say.)
*vison, Linn. Mink. Milwaukee.

LUTRA, Ray.
*Canadensis, Sabine. Otter. Milwaukee.

CANIS, Linn. The Dog.
familiaris, Linn. Indian Dog.

---

† In Long's Second Expedition.

Lupus. The Wolf.

occidentalis, Richardson. Common Wolf. Milwaukee.

*latrans (Canis latrans, Say.) Prairie Wolf. Racine.

Vulpes. The Fox.

*fulvus, Desm. Red Fox. Milwaukee.

Virginianus, Dekay. Grey Fox. Racine.

Felis, Linn.

concolor, Linn. Panther. Northern Wisconsin. (Dr. Hoy.)

Lyncus, Gray. Lynx.

borealis, Temminck. Lynx. Milwaukee.

*rufus, Tem. Wild Cat. Milwaukee.

ORDER RODENTIA.

Sciurus, Linn. The Squirrel.

*leucotis, Gappar. Grey Squirrel. Milwaukee.

*vulpinus, Gmelin. Fox Squirrel. Milwaukee.

*niger, Say. Black Squirrel. Milwaukee.

*Hudsonicus, Harlan. Red Squirrel. Milwaukee.

*striatus, Linn. Striped Squirrel. Milwaukee.

Pteromys, Illiger.

*volucella, Harlan. Flying Squirrel. Milwaukee.

sabrinus, Richardson. Winnebago County. (Dr. Hoy.)

Spermophilus, F. Cuvier.

*tridecimlineatus, Mitchell. Gopher. Milwaukee.

grammurus, Say. Line-tailed Squirrel. N. W. Territory. (Mr. Say.)

Parryi, Richardson. Racine.

Arctomys, Linn.

* morax, Gmel. Woodchuck. Racine.

Meriones, Illiger.

*Americanus, Barton. Deer Mouse. Milwaukee.

Castor, Linn.

fiber, Linn. Beaver.†

† The last Beaver killed, in the southern part of Wisconsin, was in 1819, on Sugar Creek, Walworth county, a very large one. (S. Juneau, Esq.)

FIBER, Illiger.

*zibethicus, Linn. Muskrat. Milwaukee.

HYSTRIX, Linn.

*Hudsonius, Brisson. Porcupine. Lake of the Hills, Sauk Co.

MUS, Linn.

decumanus, Pallas, Brown Rat (introduced.) Racine.

rattus, Linn. Black Rat (introduced.) Racine.

*musculus, Linn. Mouse. Milwaukee.

leucopus, Richardson. Jumping Mouse. Racine.

ARVICOLA, Lacepede.

riparius, Ord. Marsh Meadow Mouse. Racine.

hirsutus, Emmons. Beaver Field Mouse. Racine.

xanthognathus, Leach. Yellow Cheeked Meadow Mouse. Racine.

GEOMYS, Richardson.

bursarius, Say. Pouched Rat. N. W. Territory. (Mr. Say.)

LEPUS, Linn.

*nanus, Schreber. American Grey Rabbit. Racine.

*Americanus, Erxleben. Rabbit. Milwaukee.

ORDER RUMINANTIA.

BISON, Smith.

Americanus, Gmelin. Buffalo.†

ANTILOPE, Smith.

Americana, Ord. Antilope. N. W. Territory. (Mr. Say.)

CERVUS, Brisson.

*Virginianus, Linn. Deer. Milwaukee.

alces, Linn. Moose. N. W. Territory. (Mr. Schoolcraft.)

ELAPHUS.

Canadensis, Ray. Elk. N. W. Territory. (Mr. Say.)

RANGIFER.

tarandus, Linn. Rein-deer. Borders of L. Superior. (Mr. Shoolcraft.)

---

† Last seen east of Mississippi in 1832.

THE BIRDS OF WISCONSIN

Having been carefully studied by Dr. Hoy, of Racine, I have obtained his permission to insert here his "Notes," published in the 6th volume of the Proceedings of the Academy of Natural Sciences at Philadelphia, instead of the catalogue prepared by me. There are some additions and corrections made by Dr. Hoy, and I have added the common names of each species. I. A. L.*apham*

NOTES ON THE ORNITHOLOGY OF WISCONSIN.

BY P. R. HOY, M. D., OF RACINE, WISCONSIN.

With few exceptions, the facts contained in the following brief Notes, were obtained from personal observations made within fifteen miles of Racine, Wisconsin, lat. 42° 49' N.; long. 87° 40' W. This city is situated on the western shore of Lake Michigan, at the extreme southern point of the heavy timbered district, where the great prairies approach near the lake from the west, and is a remarkably favorable position for ornithological investigation. It would appear that this is a grand point, a kind of rendezvous, that birds make during their migrations. Here, within the last seven years, I have noticed 287 species of birds, about one-twentieth of all known to naturalists, many of which, considered rare in other sections, are found here in the greatest abundance. It will be seen that a striking peculiarity of the ornithological fauna of this section is, that southern birds go further north in summer, while northern species go further south in winter than they do east of the great Lakes.

[* Indicates those known to nest within the State.]

VULTURINÆ, (1 species.)

*CATHARTES AURA, Linn. Turkey Buzzard.

Found occasionally as far north as Lake Winnebago, lat. 44°. More numerous near the Mississippi River.

FALCONIDÆ, (19 species.)

*AQUILA CHRYSÆTOS, Linn. Golden Eagle.

I have a fine specimen, shot near Racine, Dec. 1853.
It is a fact worthy of note that this noble eagle, in the absence of rocky cliffs for its eyrie, does occasionally nest on *trees*. One instance occurred between Racine and Milwaukee, in 1851. The nest was fixed in the triple forks of a large oak.

HALIÆTUS WASHINGTONII, Aud. Washington Eagle.

I procured, in 1850, a living bird that had been slightly wounded, which answered to Audubon's description of this *doubtful* species. I kept it in an ample cage upwards of two years, but before its death it underwent changes in plumage which led me to believe that, had it lived, it would have proved to be the white-headed species. I put several species of hawks and owls into the same apartment, several of which the eagle killed and devoured without ceremony. When a fowl was introduced, he pounced upon it, and without attempting to kill, proceeded to pluck it with the greatest unconcern, notwithstanding its piteous screams and struggles.

It is my opinion that the Bird of Washington will prove to be only an unusually marked large and fine immature white-headed eagle. My specimen, a female, measured 7½ feet in alar extent.

*HALIÆTUS LEUCOCEPHALUS, Linn. Bald Eagle.

Numerous throughout the State. I have seen one of these fine birds pounce upon and capture a fish in the lake, The eagle did not disappear wholly under the water, which led me to suspect that the fish was in some way disabled.

*PANDION HALIÆTUS, Linn. American Fish Hawk.

Not uncommon.

*FALCO PEREGRINUS, Gmel. Duck Hawk.

This noble falcon is frequently met with, although not so numerous as many other hawks. A pair nested for several years within ten miles of this city; constructing their nest on the top of a large red beech tree.

I have seen one of these daring hawks make a swoop into a flock of Blue-winged Teal, killing two on the spot.

*FALCO COLUMBARIUS, Linn. Pigeon Hawk.

This active little falcon is numerous, especially in spring and fall, during the migration of the smaller birds. A few nest with us, many more in the pine forests of the northern part of the State. Those that nest in this vicinity, regularly morning and evening, visit the lake shore, in quest of bank swallows, which they seize with great dexterity while on the wing.

FALCO ÆSALON, Gmel. The Merlin.

I have met with three individuals of this small species, Nov. 15th, 1849, Dec. 25th, 1850, and Dec. 12th, 1852.

*FALCO SPARVERIUS, Linn. Sparrow Hawk.

Common.

*ASTUR ATRICAPILLUS, Wilson. American Goshawk.

This daring and powerful hawk is to be found at all seasons; the old birds only remain during winter, the young retiring further south. The young are so different in their plumage from the old birds, that few would suspect their identity; they are more bold and daring, much more destructive to the poultry yards than the more sly and cautious old ones—a peculiarity not, however, confined to this species.

*ASTUR COOPERII, Bonap. Cooper's Hawk.

Not uncommon. They destroy many quails, and young grouse, which, together with poultry, constitute their principal fare. They construct their nests on the top of large trees, in the most secluded situations, and leave us at the approach of winter.

*ASTUR FUSCUS, Gmel. Slate colored Hawk. Sharp-shinned?

Common. Nest here about the middle of April.

Ictinea Plumbea, Gmel. Mississippi Kite.

I saw a single specimen of this southern kite on Rock River, in this State, in July 1846. It is occasionally met with on the Mississippi River.

***Nauclerus Furcatus**, Linn. Swallow Tailed Hawk.

This kite was numerous within ten miles of Racine, where they nested up to the year 1848, since which time they have abandoned this region. I have not seen one since 1850. They nested on tall elm trees about the 10th of June, and left us about the 1st of September.

***Buteo Lagopus**, Wilson. Rough Legged Falcon.

Not numerous. I have repeatedly seen this buzzard *soar* to great heights, notwithstanding the testimony of some ornithologists to the contrary. They are in the habit, while in the pursuit of mice, frogs, &c, of balancing themselves over marshy situations on the prairies. If not successful, they *sail* off to other more suitable grounds, and renew the same motion. When they espy the quarry, they dart directly upon it, in the manner of the true falcon. Where there are trees, they may adopt a different mode of hunting. My observations apply to the prairies.

***Buteo Borealis**, Gmel. Red tailed Hawk.

Common. They do not remain with us during severe winters. I have a fine albino specimen of this species. Although pure white, the irides were *yellow*. This individual was knowh to inhabit a particular district in Huron Co., Ohio, for ten years. Although I had offered a liberal reward for the capture of the "white hawk," it was several years before I succeeded in getting him.

***Buteo Vulgaris**, Willoughby. (?) Common Buzzard.

Not numerous. One of our winter residents. It is now probable this will prove a new species, and will be named Buteo Bairdii. (Hoy.)

***Buteo Pennsylvanicus**, Wilson. Broad winged Buzzard.

Common.

***Buteo Lineatus**, Gmel. Winter Buzzard.

This noisy species is extremely numerous. The great number of hawks, of this and other species, that are often seen soaring in company during fine weather, about the 20th of September, at which time they are migrating south, is almost incrédible.

***Circus Cyaneus**, Linn. Marsh Harvier.

Common. They build their nests entirely of grasses (carex,) placed on the ground in the middle of swampy marshes. Nest about the 1st of June.

STRIGINÆ, (14 species.)

Surnia Funerea, Gmel. Hawk-Owl.

A few visit us every winter.

Surnia Nyctea, Linn. Snowy Owl.

Numerous on the prairies from November to March.

***Scops Asio**, Linn. Screech Owl.

Common. In the month of June I caught four young ones just as they were about leaving the nest. They were a deep reddish brown, in all respects similar to the old female which I shot at the time, and have preserved.

*Scops Nevia, Gmel. Mottled Owl.

Common. I am not yet satisfied that the mottled and red owls are specifically the same.

*Bubo Virginianus, Gmel. Great Horned Owl.

One of our most numerous species. I once put a remarkably large and fine owl of this species into the same cage with the "Washington Eagle," previously mentioned, which soon resulted in a contest. The moment a bird was given to the owl, the eagle demanded it in his usual peremptory manner, which was promptly resisted with so much spirit and determination, that for a time I was in doubt as to the result; but finally the eagle had to stand aside, and witness the owl devour the coveted morsel. After several similar contests, it was mutually settled that possession gave an undisputed right, the owl not being disposed to act on the offensive. I had a fine red-shouldered hawk in the same aviary, which the owl killed and ate the second night.

Bubo Subarcticus, Hoy. White-bellied Horned Owl.

This winter visitor I consider closely allied, yet distinct from the common horned owl, and as such it is described in the Proc. Acad. Nat. Sci. vol. vi. page 211. I have as yet examined but three specimens. The specimen in the collection of the Academy was known to carry off from one farm, in the space of a month, not less than twenty-seven individuals of various kinds of poultry, before it was shot.

Surnium Cinereum, Linn. Great Grey Owl.

Not numerous. I have a fine male specimen, shot near Racine, Jan. 4, 1848. A remarkable peculiarity of this specimen was, that the irides were *brilliant blood-red.* I saw one size carry off a duck on Lake Superior, near the mouth of Cerf river, Sept. 1st, 1845.

*Syrnium Nebulosum, Linn. Barred Owl.

Common in the heavy timbered districts.

*Otus Vulgaris, Aud. Long-eared Owl.

More numerous in the vicinity than any other owl. The young leave the nest about the middle of June.

*Otus Brachyotus, Linn. Short-eared Owl.

Common on the prairies, where they nest on the ground, in the tall grass. The young are fully fledged by the second week in June.

*Nyctale Acadica, Gmel. Acadian Owl. Saw whet

Common.

Nyctale Tengmalmi, Gmel. ——

I procured a single specimen near Racine, Nov. 30th, 1850. Not uncommon on the head waters of the Wisconsin river.

Nyctale Kirtlandii, Hoy. Kirtland's Owl.

A third species of this genus, found here, and described in the Proc. Acad. Nat. Sci. vol. vi. page 210.

Only two specimens have yet been observed.

Strix Flammea, Linn. American Barn Owl.

A fine specimen of this handsome owl was obtained this spring by my friend the Rev. A. C. Barry of this city. It was shot near this city, and is the only specimen which has come under my observation.

CAPRIMULGIDÆ, (2 species.)

*Antrostomus Vociferus, Wilson. Whip Poor Will.

Common. Arrives about the 1st of May, departs middle of September.

*Chordeiles Virginianus, Briss. Night Hawk.

Numerous. They leave us by the 15th of September. On the 10th of this month, 1850, for two hours before dark, these birds formed one continuous flock, moving south. They reminded me, by their vast numbers, of passenger pigeons, more than night hawks. Next day not one was to be seen.

HIRUNDINIDÆ, (6 species.)

*Progne Purpurea, Linn. Purple Martin.

Common.

*Hirundo Americana, Wilson. Barn Swallow.

Numerous.

*Hirundo Fulva, Vieill. Cliff Swallow.

A few nested, for the first time, at Racine in 1852. Numerous in many parts of the State.

*Hirundo Bicolor, Vieill. White-bellied Swallow.

Not a numerous species with us. Arrives from the 1st to the middle of April.

*Cotyle Riparia, Linn. Bank Swallow.

This numerous species perforates the banks of the lake, wherever the soil is sandy.

*Chætura Pelasgia, Temm. Chimney Swallow.

Common.

HALCYONIDÆ, (1 species.)

*Ceryle Alcyon, Linn. King-fisher.

Common.

LANIADÆ, (3 species.)

*Lanius Borealis, Vieill. Northern Butcher Bird.

This large shrike is most numerous during fall and winter. A few, however, spend the summer in the middle and northern parts of this State. During winter they subsist on field mice (arvicola) and small birds.

*LANIUS LUDOVICIANUS, Linn.? ——

I much doubt whether the north-western and southern loggerhead are the same. Our bird is *smaller* than the southern, as described in the ornithological works, the adult male measuring $8\frac{1}{4}$ to $12\frac{1}{4}$; female $8\frac{1}{4}$ to $10\frac{1}{4}$. The nest and eggs, too, differ materially from Bachman's description, as quoted by Nuttall, of those of the southern species. The Wisconsin bird constructs a compact nest. placed on the lower branches of a small tree. It is composed externally of small sticks and roots, filled in with strips of bark and the lint of various species of plants, and is amply lined with feathers, which almost conceal the six *spotted* eggs.

The male assists in incubation, which is completed in fourteen days.

I once shot a female just as the pair had commenced building. The male went on and completed the nest, even to the soft lining of feathers, then took his stand on the topmost branch of the same tree, and continued watching almost constantly for three days, apparently awaiting the return of his mate. At the end of that time I missed him, and supposed he had abandoned the spot; but the second day afterwards he returned with a new bride, who appeared well satisfied with the waiting nest, and commenced laying immediately.

They return to a particular tree to nest every year. This attachment is so great, that when the nest is destroyed, even after they commence incubation, they not unfrequently construct another on the same tree. Mice, young birds and large insects compose their fare.

Numerous on the border of the prairies. Arrive 1st of April; depart in October.

LANIUS EXCUBITOROIDES, Swains. ——

I shot a pair of birds of this species in March last (1853.) The female is faintly marked on the breast with pale brown undulating lines. This is undoubtedly a distinct species.

MUSCICAPIDÆ, (14 species.)

*TYRANNUS INTREPIDUS, Vieill. King Bird.

Common.

*TYRANNUS CRINITUS, Linn. Great Crested King Bird.

Not so common as the preceding. Inhabits the dark swampy woods, where the harsh *squeak* of this species is frequently heard.

*TYRANNULA FUSCA, Gmel. Dusky Fly-catcher.

This familiar pewee is met with everywhere.

*TYRANNULA VIRENS, Linn. Wood Pewee.

Common in the deep solitary woods.

TYRANNULA PHŒBE, Lath. Phœbe Bird.

I shot two individuals of this species May 10th, 1848. Probably not very rare, but impossible to distinguish it from the T. fusca without carefully comparing the two.

*TYRANNULA ACADICA, Gmel. Green-crested Fly-catcher. ?

The most numerous of the fly-catchers in Wisconsin.

TYRANNULA PUSILLA, Swains. ——

This species, so closely allied to the preceding, is not unfrequently met with about the 10th af May, on its passage north.

TYRANNUS COOPERII, Nutt. Olive-sided King Bird.

I have occasionally met with this bird during the latter part of May.

*SETOPHAGA RUTICILLA, Linn. American Red Start.

Numerous. Arrive 5th of May; commence constructing their nests 1st of June.

*SETOPHAGA MITRATA, Bonap. Hooded Warbler.

Not numerous near Racine, which may be considered the northern limit of this bird's summer migration.

*SETOPHAGA CANADENSIS, Linn.

This interesting species is not uncommon with us.

SETOPHAGA WILSONII, Bonap.

Common from the 10th to the 25th of May.

SETOPHAGA MINUTA, Wilson.

Rarely met with. The only specimens I have, were shot 1st of June, 1850.

*CULICIVORA CERULEO, Linn. Blue-grey Gnat-catcher.

Not uncommon. Arrives first of May.

VEREONINÆ, (6 species.)

*VIREO FLAVIFRONS, Vieill. Yellow-throated Greenlet.

Not uncommon. First appearance from 10th to 15th of May.

*VIREO SOLITARIUS, Vieill. Solitary Greenlet.

This is by no means a rare bird in Wisconsin; it frequents the most secluded thickets. Arrives about 15th of May.

*VIREO NOVEBORACENSIS, Gmel. white eyed

I have noticed but few specimens of this species. Not common.

*VIREO GILVUS, Vieill. Warbling Greenlet.

This cheerful songster is rather common with us.

*VIREO OLIVACEUS, Linn. Red-eyed Greenlet.

By far the most abundant of the birds of this genus; its sprightly and melodious song is heard almost constantly during the summer.

*ICTERIA VIRIDIS, Gmel. Yellow-breasted Chat.

A few only are to be found in the tangled thickets during the summer months.

MERULIDÆ, (10 species.)

MIMUS POLYGLOTTUS, Lath. Common Mocking Bird.

Occasionally a straggler of this charming songster finds its way as far north as Wisconsin. I saw one between Racine and Kenosha, July 16th, 1851, and a second near the State line, on Rock River, July 26th, 1846.

*MIMUS RUFUS, Linn. Brown Thrush.

Very abundant.

*MIMUS FELIVOX, Bonap. Cat Bird.

Common.

*TURDUS MIGRATORIUS, Linn. Robin.

Abundant. Arrives middle of March, leaves first of November.

*TURDUS MUSTELINUS, Gmel. Wood Thrush.

Common. Wishing to add to my collection a pair of this species, together with their nest and eggs, I shot the female, and was about to secure the nest, when the male, which had been watching me in the vicinity, commenced singing; and, as I approached the spot he glided off still farther from the nest, all the time pouring forth the most mellow and plaintive strains I ever before heard uttered by this most melodious of songsters. After I had been enticed to a considerable distance, he returned to the vicinity of the nest; three or four times I followed this bird in the same manner before I succeeded in shooting him. This movement, and the effect of his tender song, so far enlisted my sympathies that I regretted exceedingly my cruelty in destroying his nest and mate. It is common for birds to resort to various stratagems for the purpose of attracting intruders from their nests, but this is the only instance with which I am acquainted where the charms of their music were employed for this object.

TURDUS SOLITARIUS, Wilson. (?) Hermit Thrush.

Numerous during spring and fall.
Is our bird, which retires further north to breed, the same that nests in the Southern States?

*TURDUS WILSONII, Bonap. Wilson's Thrush.

Common. Nests 1st of June.

*SEIURUS NOVEBORACENSIS, Gmel. New York Water Thrush.

Abundant in spring and fall. A few nest in dark and gloomy swamps. Their song is sweet, a mixture between the Warbler's merry ditty, and the more mellow strains of the Thrush.

*SEIURUS AUROCAPILLUS, Wilson. Oven Bird.

Common.

ANTHUS LUDOVICIANUS, Lichst. American Titlark.

Abundant on the prairies in spring and fall.

SYLVIADÆ, (36 species.)

SYLVICOLA CORONATA, Wilson. Myrtle Bird.

Numerous. The first warbler that arrives in the spring—1st of April; they all go north by the third of May; in the fall they linger with us until November.

SYLVICOLA PETECHIA, Lath. Red-poll Warbler.

Very numerous, especially in the fall, when thousands may be seen any day on the prairies—running along the fences—flitting from stalk to stalk in the cornfield—all the time wagging their tails in the manner of the Titlark and Aqutic-Thrush, which they closely resemble in habits.

*SYLVICOLA ÆSTIVA, Gmel. Summer Yellow Bird.

Abundant.

SYLVICOLA MACULOSA, Lath. Spotted Warbler.

Numerous from the 5th to 27th of May.

SYLVICOLA FLAVICOLLIS, Wilson. ——

I shot a single individual of this species near Racine, June 20th, 1848.

*SYLVICOLA VIRENS. Lath. Black-throated Green Warbler.

Common. A few nest with us. The old males arrive 5th of May, young males and females about the 10th of the same month.

*SYLVICOLA BLACKBURNIÆ, Lath. Blackburnian Warbler.

One of the most numerous warblers from the 5th to the 20th of May. The old males precede the females about a week. The first arrivals of this species, as well as all others, are in the finest plumage. A few nest with us.

SYLVICOLA KIRTLANDII, Baird. Kirtland's Warbler.

I met one single individual of this recently discovered species, at Racine, May 20th, 1853.

*SYLVICOLA ICTEROCEPHALA, Lath. Chestnut-sided Warbler.

This beautiful little warbler is extremely abundant. It prefers localities with a dense under-brush, especially hazel, thinly covered with trees. In such situations it is not uncommon to hear the songs of a dozen males at the same time. They construct a nest of blades of grass and thin strips of bark intermingled with caterpillars' web, fixed in a low bush, (generally hazel,) seldom more than two or three feet from the ground; the eggs, 4 or 5 in number, closely resemble those of *S. æstiva.* But one brood is raised in a season—nest from the 10th to the 15th of June. If the nest be approached when the female is in it, she will drop to the ground and hobble along with one wing dragging, uttering at the same time a *peeping* note of distress. I once caught a young bird of this species that had just left the nest; the parent birds, in their alarm for its safety, approached so near to me that I caught the male in my hand. I let them both go, upon which, the joy of the old bird appeared to be greater for the escape of the young fledgling than for his own release.

SYLVICOLA CASTANEA, Wilson.

Arrives in large numbers about the 10th of May; all gone north by the 25th.

SYLVICOLA STRIATA, Lath. Black-poll Warbler.

Equally numerous with the preceding; the two species arrive and depart in company.

SYLVICOLA PINUS, Lath. Pine Warbler.

Not a numerous species with us. Nest in the northern pine forests.

SYLVICOLA DISCOLOR, Vieill. Prairie Warbler

A few are occasionally seen about the middle of May. Rare in Wisconsin.

*SYLVICOLA AMERICANA, Lath. Yellow-throated Black Warbler.

Common. The beautiful pensile nest of this bird has never, to my knowledge, been discribed. Audubon undoubtedly erred in attributing the nest described by him to this species. That presented by me to the collection of the Academy, is formed by interlacing and sewing together, with a few blades of grass, the pendant lichen (Usnea barbata) which grew upon a dead horizontal branch of an oak, fifty or sixty feet from the ground. A hole, just large enough for the bird to enter, is left in the angle immediately under the branch, which forms a complete roof for the nest; it is finished with a slight lining of hair. The whole forms a beautiful basket of moss, which is so admirably adapted to the purpose intended, so effectually concealed, so light and airy, that it would be almost impossible to suggest an improvement, and is certainly one of the most interesting specimens of ornithological architecture. The eggs, four or five in number, are white, with a band of light brown spots near the greater end; they measure 5 by 7¼ lines in diameter. The young leave the nest about the first week in July.

SYLVICOLA CANADENSIS, Linn. Spotted Canada Warbler.

Abundant from the 5th to 25th of May, and again from the 1st to 20th of October.

SYLVICOLA FORMOSA, Bonap. Kentucky Warbler.

Rare. Shot one near Racine, May 10th, 1851.

*SYLVICOLA CŒRULEA, Wilson. Blue-grey Warbler.

Not common. A few nest with us.

SYLVICOLA MARITIMA, Wilson. Cape May Warbler.

By no means a rare bird during the month of May. It frequents the vicinity of streams and swamps that abound with tall willows, in the tops of which this interesting warbler is commonly seen flitting about, busily searching for insects and their larvæ. It is probable that a few nest in this vicinity.

*TRICHAS MARYLANDICA, Wilson. Yellow Throat.

Common.

TRICHAS AGILIS, Wilson.

Not uncommon. I shot a pair on the 29th of May; they had mated, and were about to nest.

TRICHAS PHILIDELPHIA, Wilson. Mourning Warbler.

Rarely seen. Shot one May 10th, 1851.

*VERMIVORA PENNSYLVANICA, Swain. Worm-eating Warbler.

A few nest in this section. Rare.

*VERMIVORA CHRYSOPTERA, Linn. Golden winged Warbler.

Not uncommon. Nests with us.

VERMIVORA RUBRICAPILLA, Wilson. Nashville Warbler.

Common for two weeks in May on their passage north; they return in October, at which time the male is without the chestnut crown.

*VERMIVORA CELATA, Say. Orange-crowned Warbler.

Not an uncommon species. Frequent the most secluded swamps, where they nest.

VERMIVORA PEREGRINA, Wilson. Tennessee Warbler.

Some seasons, about the middle of May, this plain bird is met with in great abundance. This was particularly the case May 14th, 15th and 16th, 1849, when I could have procured any desired number; they literally thronged on the tops of the bush oaks in an adjoining grove. For the last two years I have not procured a single specimen.

*MNIOTILTA VARIA, Vieill. Varied Creeping Warbler.

Common.

MNIOTILTA BOREALIS, Nutt.? ——

I have met with specimens that answered to Nuttall's description, yet I am inclined to consider it a variety of the preceding.

In order to give some idea of the abundance and great variety of the warblers which visit us, I append a list shot in the forenoon of May 5th, 1852, by Rev. A. C. Barry and myself:

6	Sylvicola	Americana,	1	Sylvicola	æstiva,
1	"	pinus	4	"	canadensis.
1	"	striata,	1	"	petechia.
5	"	icterocephala,	4	"	maritima,
4	"	virens,	1	"	Setophagia canadensis,
6	"	Blackburnia,	2	"	Vermivora rubricapilla,
5	"	maculosa,	2	"	Trichas marylandica,
1	"	coronata,	3	"	Mniotilta varia.
			47		

All, except three, males in unusually fine plumage, the females not having yet arrived.

We could have obtained many more of most of the species, had it been desirable.

*TROGLODYTES ÆDON, Vieill. House Wren.

Common. First appearance 15th of April.

*TROGLODYTES HYEMALIS, Vieill. Winter Wren.

Common. Nest in abundance on the shores of Lake Superior.

*TROGLODYTES BREVIROSTRIS Nutt. Short-billed Wren.

A few nest in the vicinity of Racine. Not abundant.

*TROGLODYTES PALUSTRIS, Wilson. Marsh Wren.

Abundant on all reedy flats.

TROGLODYTES LUDOVICIANUS, Bonap. Mocking Wren.

I met a single wren of this species, July 5th, 1852. Undoubtedly nests sparingly in the southern part of the State. Rare.

REGULUS CALENDULA, Linn. Ruby-crowned Kinglet.

Abundant spring and fall.

REGULUS SATRAPA, Lichst. Golden-crested Kinglet.

Abundant. Arrives 1st of April, and remains until May 10th.

Sialia Wilsonii, Swains. Blue Bird.

The first arrival of this harbinger of spring at Racine, was—

In 1846,	- -	March 25th.
" 1847,	- -	" 20th.
" 1848,	- -	" 17th.
" 1849,	- -	" 11th.
" 1850,	- -	" 21st.
" 1851,	- -	" 15th.
" 1852,	- -	" 12th.

CERTHIADÆ, (5 species.)

*Certhia Americana, Bonap. Brown Creeper.

Common throughout the year.

*Sitta Carolinensis, Linn. White-breasted Nuthatch.

Common, remains during the winter.

*Sitta Canadensis, Linn. Red-bellied Nuthatch.

This species does not remain with us during winter. A few nest near Racine, a greater number in the pine regions in the northern part of the State.

*Parus Atricapillus, Linn. Black-cap Tit.

Abundant, remain during winter.

Parus Hudsonicus, Lath. ——

A small party of this northern species visited Racine during the unusually cold January of 1852.

AMPELIDÆ, (2 species.)

Bombycilla Garrula, Vieill. Black-throated Waxwing.

Arrives in large parties from the first to the last of November, and leaves by the 15th April. The first arrivals are all young birds, destitute of the yellow markings on the wing, and with less of the wax-like appendages. These young birds generally proceed further south to winter, while the old birds, in perfect plumage, arrive later, and seldom, if ever, go further. I never have seen an individual entirely destitute of *wax* ornaments. The only perceptible difference between the sexes is in size, the females being slightly the larger. In fifty specimens accurately measured the average was:

Females,	- - -	8 5-12—14¼
Males,	- - -	8 2-12—13¾

They are unsuspicious, permitting a near approach. Their fare consists of a variety of berries, but those of the mountain ash, (*Pyrus Americana,*) appear to be preferred to all others. They are frequently seen to eat snow as a substitute for drink.

*Bombycilla Americana, Swain. Cedar Bird.

Common, does not remain during winter.

ALAUDINÆ, (2 species.)

*Otocoris Alpestris, Linn. Horned Lark.

Abundant on the prairies. A few remain during the entire winter.

*OTOCORIS RUFA, Aud.

Not an abundant species with us; becomes more numerous as you go west.

FRINGILLIDÆ, (33 species.)

PLECTROPHANES NIVALIS, Linn. White Snow Bird.

Abundant from November to April.

PLECTROPHANES LAPPONICA, Linn. Lapland Snow Bird.

Met with in great abundance on the prairies, from the middle of October to the middle of May. Before they leave us in the spring they are in full song and perfect plumage. They sing in concert like blackbirds, either while on the wing or settled on fences.

PLECTROPHANES SMITHII, AUD. ——

Occasionally met with in considerable numbers on the prairies.

*ZONOTRICHIA ILIACA, Bonap. Fox-colored Sparrow.

Common duriug October and April.

*ZONOTRICHIA MELODIA, Wilson. Song Sparrow.

Common.

ZONOTRICHIA PENNSYLVANICA, Lath. White-throated Sparrow.

Abundant during spring and fall.

*ZONOTRICHIA LEUCOPHRYS, Gmel. White-crowned Sparrow.

Met with in great abundance in company with the preceding. A few nest in the vicinity.

ZONOTRICHIA GRAMINEA, Gmel. Bay-winged Sparrow.

Occasionally seen, but rare.

*ZONOTRICHIA PASSERINA, Wilson. Yellow-winged Bunting.

Not uncommon in the reedy *slews* on the *prairies.*

*ZONOTRICHIA PUSILLA, Wilson. Field Bunting.

Not an abundant species with us.

*ZONOTRICHIA SOCIALIS, Wilson. Chip Bird.

Common, arrive 1st of May.

ZONOTRICHIA PALLIDA, Swains. ——

Not unfrequently met with about the middle of May.

ZONOTRICHIA CANADENSIS, Lath. Tree Bunting.

Very numerous autumn and spring, but few remain through the w'nter.

*ZONOTRICHIA SAVANNA, Bonap. Savanna Bunting.

Common on high prairies.

*Zonotrichia Lincolnii, Aud. Blue Striped Bunting.

Not uncommon spring and fall. A few remain during summer, and nest with us.

*Niphea Hyemalis, Linn. Snow Bird.

Common spring and autumn. Do not remain through the winter. Nest on Lake Superior.

*Ammodromus Palustris, Wilson. Swamp Finch.

Common.

Linaria Minor, Aud. Lesser Red-poll.

Abundant every winter.

Linaria Borealis, Temm. Mealy Red-poll.

The only time I ever met with this bird was in December, 1850.

*Chrysomitris Tristis, Linn. Yellow Bird.

Common.

*Chrysomitris Pinus, Wilson. Pine Finch.

Abundant.

*Chondestes Grammacea, Say. ——

Common. Frequently met with in the roads, expanding and closing their fan-like tails at every hop. One of the most agreeable singing birds. Their song is a singular combination of the Thrush, Finch, and Tohe-Bunting. They build their nest in the open field or high prairie, under the protection of a weed or small shrub; it is constructed externally of fine grass placed in a slight excavation in the ground, and finished with a lining of hair. The eggs, four, are bluish-white, marked with straggling hair streaks and serpentine lines of dark-brown, closely resembling those of the orchard Oriole, but less pointed.

*Euspiza Americana, Gmel. Black-throated Bunting.

Not uncommon.

*Spiza Cyanea, Wilson. Indigo Bird.

Common.

*Pipilo Erythrophthalma, Wilson. Ground Robin.

Abundant.

*Carpodacus Purpureus, Gmel. Crested Purple Finch.

Common during spring and fall. A few nest with us, many more on the shores of Lake Superior.

Corythus Enucleator, Wilson. Pine Bull Finch.

Numerous during severe winters.

*Loxia Curvirostra, Linn. American Cross-bill.

Abundant in the pine forests. Large flocks occasionally visit our vicinity during fall and winter, feeding on the seed of the sunflower (*Helianthus annuus.*)

LOXIA LEUCOPTERA, Gmel. White Winged Crossbill.

Occasionally visit us—not common.

*PITYLUS CARDINALIS, Linn. Cardinal Grosbeak.

A few stragglers nest with us—rare.

*COCOBORUS LUDOVICIANUS, Wilson. Rose-breasted Grosbeak.

Common. Arrive 1st of May.

COCOBORUS VESPERTINUS, Cooper. Evening Grosbeak.

Not an uncommon bird. During winter and spring they frequent the maple woods, feeding on the seed of the sugar maple (*Acer saccharinum*,) in quest of which they spend much time on the ground. I have noticed this bird as late as the 15th of May. In all probability they nest within the State. Unsuspicious, easily approached. Their song lacks the melody of our other species of Grosbeaks.

*PYRANGA RUBRA, Wilson. Black-winged Red Bird.

Common.

STURNIDÆ, (10 species.)

*STURNELLA LUDOVICIANA, Linn. Meadow Lark.

Common, but does remain during winter.

*STURNELLA NEGLECTA, Aud.

A few visit the Lake shore in early winter. we have a specimen examined by Prof Baird and pronounced to be undoubtedly this species; it was shot on the 24th of December, when the preceding were all gone.

*YPHANTES BALTIMORE, Linn. Golden Oriole.

Abundant.

YPHANTES SPURIUS, Gmel. Orchard Oriole.

Common.

*DOLICHONYX ORYZIVORA, Linn. Bob o'link, or Rice Bird.

Abundant.

MOLOTHRUS PECORIS, Wilson. Cow Bunting.

Common. I found the egg of this bird, in one instance, in the nest of the Red-winged Blackbird.

*AGELAIUS XANTHOCEPHALUS, Bonap. Yellow-headed Troopial.

A few nest within fifteen miles of Racine, in an extensive marsh. Seldom visit the lake shore.

*AGELAIUS PHŒNICEUS, Linn. Red-winged Blackbird.

Abundant every where.

*SCOLECOPHAGUS FERRUGINEUS, Lath. Rusty Blackbird.

Common fall and spring. Arrive 15th of March. A few remain during summer.

*Quiscalus Versicolor, Vieill. Common Crow Blackbird.
Common.

CORVIDÆ, (5 species.)

*Cyanocorax Cristatus, Linn. Blue Jay.
Common through the year.

Cyanocorax Canadensis, Linn. Canada Jay.
Occasionally, during severe winters, visit the vicinity of Racine.

Pica Melanoleuca, Aud. Magpie.
Occasionally a straggler visits us. Two were shot in Caledonia, ten miles from Racine. December, 1848. A gentleman of this city obtained one at Bailies Harbor, on Lake Michigan, November 15, 1849.

*Corvus Americanus, Aud. Common Crow.
A singular fact in relation to the Crow is, that it never takes up its quarters within fifteen or twenty miles of Lake Michigan, within this State. At Racine it may be considered one of the rarest birds.

*Corvus Corax, Linn. Raven.
More numerous than the preceding. Remain through the winter.

TROCHILDÆ, (1 species.)

*Trochilus Colubris, Linn. Humming Bird.
Common.

PICIDÆ, (9 species.)

*Picus Pileatus, Linn. Crested Woodpecker.
Common in heavy timber districts.

Dendrocopus Canadensis, Gmel.
Occasionally met with during winter—rare.

*Dendrocopus Villosus, Linn.
Abundant through the year.

*Dendrocopus Pubescens, Linn. Downey Woodpecker.
Common—remain during winter.

*Dendrocopus Varius, Linn. Yellow-bellied Woodpecker.
Common. Leave us 1st of November, arrive 15th April. This Woodpecker visits the orchards during September and October, to feed upon the inner bark of the peach and cherry, girdling the stems so effectually as not unfrequently to kill the trees. I have watched them while thus engaged in my own garden, and have carefully examined, under a microscope, the contents of the stomachs of numerous specimens.

*Melanerpes Erythrocephalus, Linn. Red-headed Woodpecker.

Common, migratory.

Apternus Arcticus, Swains. Arctic Woodpecker.

I have specimens of this Woodpecker shot near Racine in the month of November.

*Colaptes Auratus, Linn. Golden-winged Woodpecker.

Common.

*Centurus Carolinus, Linn, Red-bellied Woodpecker.

Not an abundant species with us. They remain during winter.

CUCULIDÆ, (2 species.)

*Coccyzus Americanus, Linn. Yellow-billed Cuckoo.

Not so numerous as the following.

*Coccyzus Erythrophthalmus, Wilson. Black-billed Cuckoo.

Abundant.

PISTTACIDÆ, (1 species.)

Conurus Carolinensis, Linn. Paraket.

Formerly Parakets wer ecommon on the Mississippi, within this State, latterly they are seldom met with.

COLUMBIDÆ, (2 species.)

*Ectopistes migratoria, Linn. Wild Pigeon.

Abundant.

*Ectopistes Carolinensis, Linn. Turtle Dove.

Common. Remain during winter.

PAVONIDÆ, (1 species.)

*Meleagris Gallopavo, Linn. Wild Turkey.

Formerly Turkeys were common in this section, but now none are to be found.—The last noticed near Racine was in November, 1846. Abundant in the south-western countries.

TETRAONIDÆ, (6 species.)

*Ortyx Virginiana, Linn. Quail.

Within a few years this Partridge has become remarkably numerous.

*Bonasa Umbellus, Linn. Partridge.

Common in all the timber districts.

*TETRAO CANADENSIS Linn. Spruce Grouse.

Common on the head waters of Wolf River and vicinity of Lake Superior.

*TETRAO CUPIDO, Linn. Prairie Hen.

Greatly abundant. Two sportsmen, with one dog, generally bag from fifty to eighty in a day. We challenge the world for finer sporting grounds than the prairies of Wisconsin furnish during August, September and October.

*TETRAO PHASIANELLIS. Linn. Sharp-tailed Grouse.

Formerly quite common near Racine—now seldom met with. Abundant in all the north-western counties.

*LAGOPUS SALICETI, Swains. Willow Grouse.

In December, 1846, two specimens were caught in a trap ten miles from Racine. Nest in the tangle of evergreen swamps of the north-western parts of the State.—Not numerous.

RALLIDÆ, (6 species.)

*GALLINULA GALEATA, Lich. Florida Gallinule.

Abundant as far north as Lake Winnebago, latitude 44°.

*FULICA AMERICANA, Gmel. American Coot.

Common in all large marshes.

*RALLUS ELEGANS, Aud. Meadow Hen.

Abundant, nest in the prairie *slews.*

*RALLUS VIRGINIANUS, Linn. Mud Hen.

Common.

*ORTYGOMETRA CAROLINA, Linn. Sora Rail.

Greatly abundant spring and fall; a few remain during summer to nest.

*ORTYGOMETRA NOVEBORACENSIS, Lath. New York Rail.

By no means uncommon. The young of this and the preceding three species of Rail, are fully fledged by the 15th of August.

GRUIDÆ, (10 species.)

GRUS AMEIRCANA, Forster. American Crane.

A few white sand-hill cranes are occasionally seen in the western part of the State, near the Mississippi, but never approach the Lake shores, where the following species is common. It would appear that the white is a more southern species than the brown.

*GRUS CANADENSIS, Temm. Brown Sand-hill Crane.

Found on all our large prairies. Although we have seen large flights of these birds, we never saw, or heard of, a white individual within one hundred miles of Lake Michigan. A pair has nested regularly for fifteen years in a swamp nine miles from Racine, (we have noticed them ourselves regularly for the last seven years,) and they still continue in color unchanged. The locality of this nest is in a few tussocks of grass, in the midst of an almost impenetrable swamp, the nest is composed of coarse grass, built up in a conical form eighteen inches or two feet high, so situated that when the parent bird sits upon, or rather astride of this pyramidal nest, her feet hang down on either side into the water. The old nest is regularly repaired every spring.

Tantalus Loculator, Linn.

There is a fine specimen of this southern bird in the museum of the Wisconsin State Historical Society, at Madison, which was shot near Milwaukee, Sept. 1852.

*Ardea Herodias, Linn, Great Blue Heron.

A common species.

*Ardea Virescens, Linn. Green Heron.

Not uncommon in the wooded swamps of the timbered districts, never met with in the prairie marshes.

*Botaurus Lentiginosus, Swains. American Bittern,

Abundant in the marshes and *slews* of the prairies. The young are fully fledged by the 20th July. We have witnessed the bittern emit his peculiar call, "pump-au-gah;" the head is drawn up to the breast, the neck being much dilated, when the first syllable *pump* is uttered in a heavy low tone, the second syllable *au* is emitted with a partial extension of the neck, and the final *gah* is accompanied with a violent darting forward of the head to the full extent of his long neck. This ludicrous performance is repeated three or four times in succession.

*Ardeola Exilis, Bonap. Small Bittern.

Abundant on the reedy marshes, never found in the dark, shaded, woody smamps.

Egretta Leuce, Jardins. Great White Heron.

A single individual shot near Racine. June, 1851.

*Egretta Candidissima, Gmel. White-crested Heron.

Not an uncommon species along the borders of small lakes. Nest in communities, on trees in Tamarack swamps.

Egretta Caerulea, Jard. Blue Heron.

Shot one August 28th, 1848, on Root River.

CHARADRIADÆ. (6 species.)

Charadrius Marmoratus, Wagler. Golden Plover.

Visit us in great numbers spring and fall.

Charadrius Melodius, Ord. Piping Plover.

Occasionally met with in the fall, not numerous.

*Charadrius Vociferus, Linn. Kill-deer Plover.

Common, arrive from 18th to 25th of March.

Charadrius Semipalmatus, Bonap. American Ring Plover.

A few only met in May and October. Rare.

Charadrius Helveticus, Linn. Whistling Plover.

Not abundant, April, May and September.

Strepsilas Interpres, Linn, Turnstone.

Common, spring and autumn.

SCOLOPACIDÆ, (27 species.)

TRINGA ALPINUS, Linn. Black-breasted Sand Piper.
Only met with sparingly, April and October.

TRINGA SHINZII, Brehm. Schintz's Sand Piper.
A rare species with us, spring and fall.

TRINGA PECTORALIS, Bonap. Pectoral Sand Piper.
We have only noticed this species in autumn.

TRINGA RUFESCENS, Vieill. Rough-breasted Sand Piper.
Quite common from September 15th to October 10th. Never met in the spring.

? TRINGA MARITIMA, Brunnich. Purple Sand Piper.
Greatly abundant from 15th of April to 20th of May.

TRINGA MINUTA, (?) Leister.
Not common. A few found on the borders of small lakes.

*TRINGA PUSILLA, Wils. Wilson's Sand Piper.
Common. Nest in the reedy marshes.

TRINGA CINEREA, Wils. Red-breasted Sand Piper.
We have only met this bird in October. Rare.

TRINGA SEMIPALMATA, Wils. Semipalmated Sand Piper.
Shot several October 1st, 1850. Rare.

TRINGA DOUGLASII, Swains. Long-legged Sand Piper.
? Shot two April 10th, 1848. Rare.

CALIDRIS ARENARIA, Illiger, Sanderling.
Common on the Lake Shore spring and fall.

TOTANUS SEMIPALMATUS, Lath. Willet.
We have met this species as late as the 10th of June. Not numerous.

*TOTANUS VOCIFERUS, Wils. Varied Tatler.
Abundant. Nest in all large marshes.

*TOTANUS FLAVIPES, Lath. Yellow Legs.
Common.

*TOTANUS SOLITARIUS, Wilson. Solitary Tatler.
Not uncommon.

*TOTANUS MACULARIUS, Wilson. Spotted Sand Lark.
Common.

*Totanus Bartramius, Wilson. Grey Plover.

Abundant. Nest on the high rolling prairies.

Limosa Fedoa, Linn. The Marlin.

Not an uncommon bird. We saw a pair on a marshy slew near Wisconsin river, June 15th, 1848, where they were probably nesting.

Limosa Hudsonica, Lath. Ring-tailed Marlin.

We shot a single bird of this well marked species November 1st, 1850.

Macrorhampus Griseus, Leach. Dowitchee.

Found sparingly spring and fall.

*Scolopax Wilsonii, Temm. Common American Snipe.

Common, nest abundantly with us.

*Rusticola Minor, Vieill. American Woodcock.

The first woodcock noticed in this section was in 1847, since which time they have been rapidly on the increase.

Recurvirostra Americana, Linn. American Avoset.

We saw a pair on a marsh near Fox river, July 26th, 1846, where they had probably nested; we also met with a small party on the Des Plaine, May, 1847.

Himantopus Nigricollis, Vieill. The Lawyer.

Met a small flock of these singular birds near Racine, April, 1847.

*Numenius Longirostris, Wilson. Long-billed Curlew.

Common on large thinly settled prairies. We found them nesting in abundance on Sun Prairie, Columbia County; also within six miles of Ceresco.

*Numenius Hudsonicus, Lath. Jack Curlew.

Common spring and fall. We found a few nesting near Fox Lake, June 15, 1848.

Numenius Borealis, Lath. Esquimaux Curlew.

Met with in company with the preceding in early spring and fall. Rare.

PINNATIPEDES, (2 species.)

Phalaropus Fulicarius, Bonap. Red Phalarope.

Met with a small flock first of November, 1847. Rare.

*Lobipes Wilsonii, Jardin. ——

Not an abundant species. Prof. S. F. Baird shot one near Racine, July 15, 1853. Nests sparingly in marshes.

ANATIDÆ, (29 species.)

*Anser Canadensis, Linn. Wild Goose.

Greatly abundant spring and fall, and not a few remain during the summer to nest.

ANSER HYPERBOREUS, Gmel. Snow Goose.

This species is seen late in the fall in large flocks, numbering sometimes not less than two hundred.

ANSER ALBIFRONS, Bechst. White-fronted Goose.

Met in large numbers spring and fall.

ANSER LEUCOPSIS, Bechst. ——

In December, 1850, there was a single barnacle goose kept about the harbor for two weeks.

ANSER BERNICLA, Linn. Brant.

Occasionally met on the lake shore. Rare.

ANSER HUTCHINSII, Rich. Hutchinson's Goose.

Large flocks of this species occasionally visit us in the fall; rarely seen in the spring.

CYGNUS AMERICANUS, Sharpless American Swan.

Visit us regularly spring and fall.

CYGNUS BUCCINATOR, Rich. ——

This larger swan is frequently seen, and occasionally shot in our vicinity.

*ANAS CLYPEATA, Linn. Shoveller.

Not uncommon. A few nest in the prairie slews.

*ANAS BOSCHAS, Linn. Mallard.

Common.

*ANAS OBSCURUS, Gmel. Black Duck.

Numerous in the interior—seldom visit the lake.

ANAS STREPERA, Linn. Grey Duck.

Shot 2d March, 1848, the only specimens we ever met with.

DAFILA ACUTA, Linn. Pin-tail Duck.

Common only early in spring and late in the fall.

MARECA AMERICANA, Gmel. American Widgeon.

Abundant.

*QUERQUEDULA DISCORS, Linn. Blue-winged Teal.

Very abundant. Nest in all the large slews.

*QUERQUEDULA CAROLINENSIS, Steph. Green-winged Teal,

Common.

*DENRONESSA SPONSA, Linn. Wood Duck.

Common.

FULIGULA RUBIDA, Wilson. Ruddy Duck.

Met occasionally fall and spring. Not abundant.

FULIGULA VALISNERIA, Wilson. Canvass Back.

Rarely met. March and October.

FULIGULA FERINA, Linn. Red Head.

Not uncommon.

*FULIGULA MARILA, Lann. Broad Bill.

Common.

*FULIGULA RUFITORQUES, Bonap. Bastard Broad Bill.

Common. Nests on the borders of grassy lakes.

CLANGULA VULGARIS, Fleming. Whistler.

Common on the lake in winter and early spring.

CLANGULA ALBEOLA, Linn. Buffle-headed Duck.

Common.

CLANGULA HISTRIONICA, Linn. Harlequin Duck.

One shot in Racine harbor December 15th, 1851. Rare.

HARELDA GLACIALIS, Linn. Old-wife.

Common on the Lake during winter and early spring.

MERGUS MERGANSER, Linn. Buff-breasted Sheldrake.

Common; remain during winter.

*MERGUS SERRATOR, Linn. Red-breasted Sheldrake.

Common. A few nest with us.

*MERGUS CUCCULATUS, Linn. Hooded Sheldrake.

Abundant. Nest on the reedy flats.

PELECANIDÆ, (2 species.)

PHALACROCORAX DILOPHUS, Swain. Double Crested Cormorant.

Occasionally visit our rivers and small lakes Rare.

PELECANUS ONOCROTALUS, Linn. Pelican.

About the 10th of March the pelicans arrive, and after spending a few days in the small lakes, go further north.

LARIDÆ, (11 species.)

STERNA CAYANA, Lath. Cayenne Tern.

Rarely visits us.

*Sterna Nigra, Linn. Black Tern.

Abundant about lakelets and marshes. Never found on Lake Michigan.

*Sterna Anglica, Montague. Marsh Tern.

We have but seldom met the marsh tern in this vicinity.

*Sterna Hirundo, Linn. Common Tern.

Abundant. Nest on a small rocky island in the northern part of Lake Michigan

Larus Franklinii, Rich. ——

Visit us only in severe winters. Rare.

Larus Bonapartii, Rich. Bonaparte's Gull.

Associate with the common Tern fall and spring, in great numbers.

Larus Tridactylus, Linn. Three-toed Gull.

Met on the lake, Nov., 1853.

Larus Sabini, Sabine.

Saw two in company with the preceding.

Larus Glaucus, Brunnich. ——

Another rare winter visitor.

*Larui Agentatus, Brunnich. Winter Gull.

The common Gull of the lakes. Nest on a rocky island in company with the common Tern.

Larus Zonorhynchus, Rich. Common American Gull.

A rare species with us. Mr. Samuel Sircomb has a specimen shot at Milwaukee.

COLYMBIDÆ, (6 species.)

*Colymbus Glacialis, Linn. Great Loon or Diver.

Common.

Colymbus Septentrionalis, Linn. Red-throated Loon.

Not uncommon during winter.

Podiceps Rubricollis, Lath. Red-necked Grebe.

Only found in winter. Rare.

Podiceps Cornutus, Linn. Horned Grebe.

Common spring and fall.

*Podiceps Carolinensis. Dipper.

Common. Nest in marshes.

*Podiceps Cristatus, Lath. Crested Grebe.

A common species; nests on the margin of small lakes.

REPTILES.

ORDER TESTUDINATA.

CHELONURA, Fleming.
*serpentina, Say. Snapping Turtle.

EMYS, Brongniart.
*picta, Gmelin. Painted Tortoise. Milwaukee.

CISTUDA, Fleming.
Blandingii, Holbrook. Blanding's Tortoise. Prairies of Wisconsin. (Holbrook.)

ORDER OPHIDIA.

CROTALUS, Linn.
*durissus, Linn. Banded Rattle Snake. Grant Co.

CROTALOPHORUS, Gray.
tergeminus, Holb. Massasauga. Racine.

EUTAINIA, Baird & Girard.
*sirtalis, B. & G. (coluber sirtalis, Linn. Tropidonotus tænia, De Kay.) Striped Snake. Milwaukee.

radix, B. & G. Racine.

NERODIA, Baird & Girard.
*sipedon, B. & G. Watersnake. Milwaukee.

SCOTOPHIS, Baird & Girard.
vulpinus, B. & G. Racine.

OPHIBOLUS, Baird & Girard.
eximius, B. & G. (Coluber eximius, De Kay.) Milk Snake. Milwaukee.

BASCANION, Baird & Girard.
*constrictor, B. & G. Black Snake. Milwaukee.

CHLOROSOMA, Wagl.
*vernalis, B. & G. (Coluber vernalis, De Kay.) Green Snake. Racine.

DIADOPHIS, Baird & Girard.
punctatus, B. & G. (Coluber punctatus, Linn.) Ring-necked Snake. Milwaukee.

STORERIA, Baird & Girard.
Dekayi, B. & G. (Tropidonotus Dekayi, Holb.) Racine.
occipito-maculata, B. & G. Racine.

ORDER AMPHIBIA.

RANA, Linneus.

*palustris, Le Conte. Marsh Frog. Milwaukee.
*sylvatica, Le Conte. Wood Frog. Milwaukee.
halcinda, Kalm. Shad Frog. Milwaukee.

SALAMANDRA, Brongniart.

*subviolacea, Barton, Violet Salamander.

MENOBRANCHUS, Harlan.

*lateralis, Say. Banded Proteus. Milwaukee River.

FISHES.

ORDER SPINE-RAYED.

PERCA, Linneus.

flavescens, Mitchell. Yellow Perch. Milwaukee.

POMOTIS, Cuvier.

vulgaris, Cuv, Sunfish. Milwaukee.

CORVINA, Cuvier.

oscula, Lesueur. Sheephead. Milwaukee.

ORDER ABDOMINAL.

PIMELODUS, Cuvier.

catus, Linn. Cat-fish. Milwaukee.

CATOSTOMUS, Lesueur.

aureolus, Les. Mullet. Milwaukee.

LEUCISCUS, Klein.

atronasus, Mitchell. Minnow. Milwaukee.

ESOX, Cuvier.

estor, Lesueur. Muskallonge. Milwaukee.
reticulatus, Lesueur. Pickerel. Milwaukee.

SALMO, Linneus.

fontinalis, Mitchell. Brook Trout. Northern Wisconsin.
amethystus, Mitchell. Lake Trout. Milwaukee.

CORREGONUS, Cuvier.

albus, Lesueur. White Fish. Milwaukee.

Amia, Linn.
amia calva. Dog Fish. Milwaukee.

Lepisosteus, Lacepede.
osseus, Linn. Gar Fish. Rock River.

CARTILAGINOUS.

Acipenser, Linn.
rubicundus, Lesueur. Sturgeon. Milwaukee. L. Winnebago.

MOLLUSCA.

ORDER GASTEROPODA.

Ancylus, Muller.
rivularis, Say. Milwaukee and Rock Rivers.
diaphanus, Hald. Milwaukee River.

Vitrinia, Draparnaud.
pellucida, Drap. N. W. Territory, (Mr. Say.)

Helix, Linn.
albolabris, Say. Milwaukee. Menasha. Two Rivers. Sheboygan.
alternata, Say. Milwaukee. Two Rivers. Sheboygan.
arborea, Say. Milwaukee. Madison. Two Rivers. Sheboygan.
chersina, Say. N. W. Territory, (Mr. Say.)
concava, Say. N. W. Territory, (Binney.)
fraterna, Say. Manitowoc.
hirsuta, Say. Milwaukec. Sheboygan.
labyrinthica, Say. Milwaukee. Two Rivers. Sheboygan.
lineata, Say. Milwaukee. Two Rivers. Sheboygan.
ligera, Say. N. W. Territory, (Mr. Say.)
monodon, Racket. Milwaukee. Manitowoc. Sheboygan.
multilineata, Say. Milwaukee. Madison.
perspectiva, Say. Milwaukee. Madison. Two Rivers.
profunda, Say. Milwaukee. Manitowoc. Sheboygan.
porcina, Say. N. W. Territory, (Mr. Say.)

Pupa, Lamarck.
armifera, Say. Milwaukee.
corticaria, Say. Milwaukee.
ovata, Say. [P. Modesta, Immatine.] Milwaukee.

Succinea, Draparnaud.
obliqua, Say. Milwaukee. Two Rivers.
avara, Say. N. W. Territory, (Mr. Say.)

BULIMUS, Bruguieres.

lubricus, Brug. Milwaukee. Madison. Sheboygan.
harpa, Pfeiffer. (Helix harpa, Say.) N. W. Territory, (Mr. Say,)

PLANORBIS, Lamarck.

armigerus, Say. Milwaukee River. Muskego Lake.
bicarinatus, Say. Milwaukee River. Four Lakes. Sheboygan.
campanulatus, Say. Milwaukee River, Rock, Fourth, and Muskego Lakes. Sheboygan.
corpulentus, Say. N. W. Territory, (Mr. Say.)
deflectus, Say. Milwaukee and Twin Rivers. Rock, Fourth and Muskego Lakes.
exacutus, Say. Milwaukee River.
parvus, Say. Milwaukee and Manitowoc Rivers. Muskego Lake.
trivolvis, Say. Milwaukee and Twin Rivers. Muskego Lake.

LIMNEA, Lamarck.

caperata, Say. (L. umbilicata Adams.) Milwaukee and Manitowoc Rivers. Muskego Lake.
catascopinn, Say. N. W. Territory, (Mr. Say.)
columella, Say. (L. Macrostoma, Say.) Milwaukee.
emarginata, Say. Four Lakes.
fragilis, Linn. (L. Elodes, Say.) Milwaukee, Manitowoc and Sheboygan Rivers. Rock, Muskego and the Four Lakes.
gracilis, Say. Milwaukee River.
jugularis, Say. (L. stagnalis, Kirtland.) Milwaukee, Sheboygan and Twin Rivers. Muskego, Rock, Horricon and Fourth Lakes.
megasoma, Say. N. W. Territory, (Mr. Say.)
umbrosa, Say. N. W. Territory, (Mr. Say.)

PHYSA, Draparnaud.

heterostropha, Say. Milwaukee, Sheboygan and Twin Rivers. Rock L.
elongata, Say. Milwaukee and Manitowoc Rivers.

PALUDINA, Lamarck.

decisa, Say. Milwaukee, Sheboygan and Rock Rivers.
isogona, Say. Rock River.
subglobosa, Say. N. W. Territory, (Mr. Say.)

AMNICOLA, Gould & Haldeman.

limosa, Say. N. W. Territory, (Mr. Say.)
lustrica, Say. Four Lakes.

MELANIA, Lamarck.

depygis, Say. Milwaukee and Sheboygan Rivers.
elevata, Say. Milwaukee and Manitowoc Rivers.

VALVATA, Muller.

tricarinata, Say. Milwaukee River. Rock and Four Lakes.
sincera, Say. Milwaukee River. Four Lakes.

ORDER ACEPHALA.

UNIO, Bruguieres.

bullatus, Raf.* [U. pustulosus, Lea.] Rock River. Wisconsin River at Prairie du Sac.

cardium, Raf. [U. ventricosus, Barnes.] Mississippi at Prairie du Chien. Wisconsin River, (Mr. Barnes.)

cariosus, Say. Silver Lake. Fourth Lake.

clava, Lam. [U. mytiloides, Raf.] Rock River. Wisconsin at Prairie du Sac.

dilatus, Raf. [U. gibbosus, Bar.] Manitowoc, Rock and Wisconsin Rivers.

fasciolaris, Raf. [U. phaseolus, Hildreth, U. mucronatus Bar.] Wisconsin River, (Mr. Barnes.)

fasciatus, Raf. [U. crassus, U. ellipticus, and U. carinatus, Barnes.] At Prairie du Chien, (Mr. Say.) Wisconsin and Neenah Rivers, (Mr. Barnes.) Rock River.

luteolus, Lam. [U. siliquoideus, and U. inflatus, Bar.] Milwaukee and Rock Rivers. Pike Creek. Wisconsin River, (Mr. Barnes.)

metanervus, Raf. [U. nodosus, Bar.] Wisconsin River at Prairie du Sac.

nervosus, Raf. [U. zigzag, and U. donaciformis, Lea.] Wisconsin River at Prairie du Sac.

olivarius, Raf. [U. ellipsis, Lea.] Wisconsin River at Prairie du Sac.

parvus, Barnes. Neenah (Fox) River, (Mr. Barnes.)

prasinus, Conrad. [U. Schoolcraftensis, Lea.] Neenah River, (Mr. Lea.)

radiatus, Lam. Wisconsin River. (Mr. Barnes.)

rectus, Lam. [U. prœlongus, Barnes.] Rock River. Wisconsin River at Prairie du Sac. Neenah River, (Mr. Barnes.)

reflexus, Raf. [U. cornulus Bar.] Neenah River, (Mr. Barnes.)

subrostratus, Raf. [U. iris, Lea.] Milwaukee and Root Rivers.

trigonus, Lea. Milwaukee, Sheboygan and Rock Rivers.

truncatus, Raf. [U. elegans, Lea.] Wisconsin River at Prairie du Sac.

tuberculatus, Raf. [U. verrucosos, Bar.] Wisconsin River, (Mr. Barnes) Rock River.

undatus, Bar. Neenah River, (Mr. Barnes,) Wisconsin at Pr. du Sac.

verrucosus, Raf. [U. tuberculatus, Bar.] Neenah River, (Mr. Barnes) Wis. River at Prairie du Sac.

METAPTERA, Rafinesque, Agassiz.

alata, Conrad, [Unio alatus, Say.] Milwaukee, Rock, Neenah, Wisconsin and Sheboygan Rivers.

fragilis, Con. [U. fragilis, Say. U. gracilis, Bar.] Sheboygan and Rock Rivers. Wisconsin River at Prairie du Sac.

PLECTOMERUS, Conrad.

(Proc. Ac. Nat. Sc., vol. VI, p. 260.)

plicatus, Con. [Unio plicatus Bar.] Rock River. Wisconsin River at Prairie du Sac.

---

*I follow Mr. T. A. Conrad's Synopsis of the Family of Naiades, recently published, (Proc. of the Acad. of Nat. Sciences, vol. VI, p. 243,) for reasons there given, which appear to be conclusive.

COMPLANARIA, Swainson.

complanata, Con. [Alasmodonta complanata, Bar.] Wisconsin and Neenah Rivers, (Mr. Barnes.) Sheboygan and Rock Rivers.
costata Con. [Alas costata Raf. A. rugosa Bar.] Wisconsin and Neenah Rivers, (Mr. Barnes.) Milwaukee and Rock Rivers.
compressa, Con. [Symphynota compressa Lea.] Milwaukee River.

ALASMODONTA, Say.

marginata, Say. Milwaukee, Sheboygan and Rock Rivers.
leptodon Raf. [Unio planus, Bar. U. tenuissima, Lea.] Wisconsin River, (Mr. Barnes.)

STROPHITES, Rafinesque.

calceolus, Con. [Unio calceolus, Lea.] Milwaukee, Root and Rock Rivers. Rock Lake.
edentulus, Con. [Alas edentula, Say. Anodonta edentula, De Kay.] Milwaukee and Rock Rivers.

ANODONTA, Bruguieres.

cataracta, Say. [A. fluviatilis, Lea.] Milwaukee River. Fourth Lake.
declivis, Con. [A. plana, Lea.] Milwaukee River.
ferussaciana, Lea. Milwaukee, Sheboygan and Rock Rivers. Pike Creek. Oconomowoc and Silver Lakes.
imbecilis, Say. [A. incerta, Lea.] Milwaukee River.

CYCLAS, Lamarck.

similis, Say. Common.

PALÆONTOLOGY OF WISCONSIN,

Being an enumeration of the Fossil Organic Remains discovered in the rocks of that State. By I. A. LAPHAM.

This list of fossils will be of use in making a geological survey of the State. As an instance of the importance of the careful study of these interesting relics of a "former world," I may mention that this list shows conclusively that the rocks of this State belong to the Silurian period, and are therefore much older than the Coal Formation. We hence infer, with confidence, that no coal beds of workable value, will ever be found in Wisconsin; and all the money heretofore expended, or that will hereafter be expended by ignorant persons, in search of this valuable product, is only a useless waste of capital.

PLANTÆ.

SCOLITHUS, Hall, Palæont. of N. Y., vol. I. p. 2.

linearis, Hall, Pal. N. Y., vol. I. p. 2. One mile north of Lyons, Sauk Co , also near Madison.

PALÆOPHYCUS, Hall, Pal. of N. Y., I. p. 7.

tubularis, Hall. Janesville.

PHYTOPSIS, Hall, Pal. of N. Y., I. p. 38.

tubulosum, Hall. Mineral Point.

BUTHOTREPHIS, Hall, Pal. N. Y., I. p. 8.

succulens, Hall, Pal. N. Y., I. p. 62. Mineral Point.

ZOOPHYTA.

STREPELASMA, Hall, Pal. of N. Y., I. p. 17.

expansa, Hall. Doty's Island, Lake Winnebago.
corniculum, Hall, Pal. N. Y., I. p. 69. Blue Mounds, Beetown, Exeter, Beloit, Emerald Grove.
parvula, Hall, Pal. N. Y., I. p. 71. Mineral Point, Fairwater, Doty's I.

STICTOPORA, Hall, Pal. N. Y., I. p. 73.

ramosa, Hall, Pal. N. Y., I. p. 51. Mineral Point.

CHÆTETES.

lycoperdon, Hall, Pal. N. Y., I. p. 64 (Favosites lycoperdon, Say.) Beetown, Mineral Point, Beloit.

RECEPTACULITES.

a species resembling R. Neptuni, De France. (Coscinopora sulcata? Owen.) Mineral Point, Blue Mounds, Wyota, Emerald Grove, Whitewater, Fort Atkinson, Watertown.

GRAPTOLITHUS.

Hallianus, Prout, Am. Jour. of Science, Vol. XI., p. 187. Osceola Mills, St. Croix River.

DIPLOPHYLLUM, Hall. Pal. N. Y., II. p. 115.

cæspitosum, Hall. Milwaukee.

FAVOSITES.

Niagarensis, Hall, Pal. N. Y., II. p. 125. Milwaukee.
favosa, Goldfus. (F. striata, Say.) Milwaukee, Bailey's Harbor, Door Co.

CATENIPORA. The Chain Coral.

agglomerata, Hall, Pal. N. Y., II p. 129. Milwaukee.
gracilis, Hall, Fost. & Wh. Report, p. 212. Eastern shore of Green Bay.

HELIOLITES, Hall, Pal. N. Y., II. p. 130.

pyriformis, Hall. Milwaukee.
macrostylus, Hall, Pal. N. Y., II. p. 135. Milwaukee.

STROMATOPORA, Goldfus.

concentrica, Goldfus. Hall, Pal. N. Y., II. p. 136. Milwaukee.

CRINOIDEA.

SCHIZOCRINUS, Hall, Pal. N. Y., I. p. 81.

nodosus, Hall. Mineral Point, Beetown, Blue Mounds, Doty's Island.

EUCALYPTOCRINUS.

decorus, Hall, Pal. N. Y., II. p. 207, (Hypanthocrinities, Philips.) Racine.

CARYOCRINUS, Say.

ornatus, Say. Hall, Pal. N. Y. II., p. 216. Milwaukee, Racine.

BRACHIOPODA.

LINGULA.

prima, Conrad. Hall, Pal. N. Y., I. p. 3. Falls of the St. Croix.
antiqua, Hall, Pal. N. Y., I. p. 3. Falls of the St. Croix.
obtusa, Hall, Pal. N. Y., I. p. 98. Hazel Green, Little Butte des Morts.

LEPTÆNA.

alternata, Conrad. Hall, Pal. N. Y., I. p. 102. Mineral Point, Hazel Green, Sturgeon Bay.
deltoidea, Conrad. Hall, Pal. I., p. 106. Blue Mounds, Mineral Point Newark and Beloit, Rock Co.
seiicea, Sowerby, Hall, Pal. N. Y., I. p. 110. Platte Mounds, Mineral Point, Blue Mounds, Doty's Island.
filitexta, Hall, Pal. N. Y., I. p. 111. Mineral Point.
planumbona, Hall, Pal. N. Y., I. p. 112. Mineral Point.
deflecta, Conrad. Hall, Pal. N. Y., I. p. 113. Mineral Point.
recta, Conrad. Hall, Pal. N. Y., I. p. 113. Patch Grove.
planoconvexa, Hall, Pal. N. Y., I. p. 114.
depressa, Delman. Hall, Pal. N. Y., II. p. 257. Milwaukee.
subplana, Conrad. Hall, Pal. N. Y., II. p. 259. Milwaukee.

ORTHIS.

testudinaria, Delman. Hall, Pal. N. Y., I. p. 117. Mineral Point, Platte Mounds, Blue Mounds, Beloit, Sturgeon Bay.
subæquata, Conrad. Proc. Ac. Nat. Sc. I. p. 333. Hall, Pal. N. Y., I. p. 118. Mineral Point.
bella-rugosa, Conrad. Hall, Pal. N. Y., I. p. 118. Mineral Point.
disparilis, Conrad. Hall, Pal. N. Y., I. p. 119. Mineral Point.
perveta, Conrad. Hall, Pal. N. Y., I. p. 120. Mineral Point.
tricenaria, Conrad. Hall, Pal. N. Y., I. p. 121. Mineral Point, Blue Mounds, Exeter, Newark, Rock Co.
pectinella, Conrad. Hall, Pal. N. Y., I. p. 123. Mineral Point.
occidentalis. Hall, Pal. N. Y., I. p. 127. Sturgeon Bay.
hybrida, Sowerby. Hall, Pal. N. Y., II. p. 253. Milwaukee.

Spirifer.

lynx, Von Buch. Hall, Pal. N. Y., I. p. 133. Mineral Point, Doty's Island, Sturgeon Bay.

Niagarensis, Conrad. Hall, Pal. N. Y., II. p. 264. Milwaukee.

Atrypa.

increbescens. Hall, Pal. N. Y., I. p. 146. Mineral Point, Newark.
reticularis, Dalman. Hall, Pal. N. Y., II. p. 72. (Anomia reticularis, Linn.) Milwaukee.

nitida, Hall, Pal. N. Y., II. p. 268. Milwaukee.
obtusicplicata, Hall, Pal. N. Y., II. p. 279. Milwaukee.

Pentamerus.

Oblongus, Murchison. Hall, Pal. N. Y., II. p. 79. Milwaukee, Blue Mounds, Bailey's Harbor, Door Co., Sturgeon Bay.

occidentalis, Hall, Pal. N. Y., II. p. 341. On the peninsula between Green Bay and Lake Michigan. Mr. Hall.

ACEPHALA.

Nucula.

levata, Hall, Pall. N. Y., I. p. 150. Platte Mounds, Hazel Green.

Tellinomya, Hall, Pal. N. Y., I. p. 151.

nasuta, Hall. Mineral Point.

Amboychia, Hall, Pal. N. Y., I. p. 163.

Amygdalina, Hall, Pal. N. Y., I. p. 165. Mineral Point, Beetown, Beloit.

Modiolopsis.

curta, Conrad. Hall, Pal. N. Y., I. p. 297. Mineral Point.
ovatus, Hall, Pal. N, Y., II. p. 101. Milwaukee.

Pyrenomœus, Hall, Pal. N. Y., II. p. 87.

cuneatus, Hall. Milwaukee.

GASTEROPODA.

Maclurea, Laseuer.

magna, Laseuer, Jour. Acad. Nat. Sc., vol. I., p. 313, pl. 13, figs. 1, 2, 3. Hall, Pal. N. Y., I. p. 26, pl. 5, fig. 1. Newark, Rock county.

Pleurotomaria.

Umbilicata, Hall, Pal. N. Y., I. p. 43. Beloit, Fairwater, Doty's Island,
lenticularis, Conrad. Hall, Pal. N. Y., I. p. 172. Mineral Point, Exeter, Newark, Doty's Island, West side of Green Bay.

subconica, Hall, Pal. N. Y., I. p. 174. Mineral Point, Newark, Rock Co.

MURCHISONIA.

tricarinata, Hall, Pal. N. Y., I. p. 178. Mineral Point.
bellicincta, Hall, Pal. N. Y., I. p. 179. Beetown, Blue Mounds, Exeter, Emerald Grove.
major, Hall, in Foster & Whitney's Report, p. 209. Western Shore of Green Bay.
gracilis, Hall, Pal. N. Y., I. p. 181. Mineral Point, Exeter, Newark, Doty's Island.

SUBULITES, Conrad. Hall, Pal. N. Y., I. p. 182.

elongata, Conrad. Hall. Mineral Point, Beloit, Patch Grove.

BELLEROPHON.

bilobatus, Sowerby. Hall, Pal. N. Y., I. p. 184. Mineral Point, Doty's Island.

BUCANIA.

expansa, Hall, Pal. N. Y., I. p. 186. Newark, Rock Co.

CYRTOLITES.

compressus, Conrad. Hall, Pal. N. Y., I. p. 188. Mineral Point.

CYCLONEMA, Hall, Pal. N. Y., II. p. 87.

bilix (Pleurotomaria? bilix, Hall, Pal. N. Y., I. p. 305.) Near Prairie du Chien.

PLATYOSTOMA, Conrad. Hall, Pal. N. Y., II. p. 286.

Niagarensis, Hall, Pal. N. Y., II. p. 287. Milwaukee.
hemispherica, Hall, Pal. N. Y., II. p. 288.

CEPHALOPODA.

ORTHOCERAS.

multicameratum, Conrad. Hall, Pal. N. Y., I. p. 45. Beetown, Mineral Point.
bilineatum, Hall, Pal. N. Y., I. p. 199. Hazel Green.
anellum, Conrad. Pro. Ac. Nat. Sc. I., p. 334—Hall, Pal. N. Y., I. p. 202. Hazel Green, Mineral Point.
undulatum, Hisinger. (O. annulatum, Sowerby.) Hall, Pal. N. Y., I. p. 293. Milwaukee.

LITUITES.

undatus, Conrad, in Hall, Pal. N. Y. I., p. 52. Beloit.
convolvulans ? Hisinger. Hall, Pal. N. Y., I. p. 53. Newark, Rock County.

GONIOCERAS, Hall, Pal. N. Y., I. p. 54.

anceps, Hall. Mineral Point.

CYRTOCERAS.

macrostonum, Hall, Pal. N. Y., I. p. 194. Hazel Green.

ONCOCEROS. Hall, Pal. N. Y., I. p. 196.

constrictum, Hall. Newark, Beloit, Fairwater.

CRUSTACEA.

ASAPHUS, Brongniart.

Barrandi, Hall, in Fost. & Whitney's Report, p. 212. Near Platteville.
extans, Hall, Pal. N. Y., I. p. 228. Patch Grove, Mineral Point.

CYTHERINA.

fabulites, Conrad. Proc. Acad. Nat. Sc. Vol. I., p. 332. Beloit, Mineral Point.

ILLÆNUS.

crassicauda, Dalman. Hall, Pal. N. Y. I. p. 229. Mineral Point, Hazel Green.

ISOTELUS, De Kay.

gigas, De Kay. Hall, Pal. N. Y., I. p. 231. Mineral Point.

CERAURUS, Green.

pleurexanthemus, Green. Hall, Pal. N. Y., I. p. 242. Beloit, Mineral Point, Patch Grove.
insignis, Beyrich. Hall, Pal. N. Y., II. p. 300.

PHACOPS.

Dalmani, Portlock. (P. callicephalus. Hall, Pal. N. Y., I. p. 247.) Patch Grove.

BUMASTIS.

barriensis, Murchison. Hall, Pal. N. Y., II. p. 302. Burlington Racine, Co.; Milwaukee; Hartford, Washington Co.

CALYMENE, Brongniart.

Blumenbchii, Brongniart. Hall, Pal. N. Y., II. p. 307. Milwaukee. Racine.

PLANTS OF WISCONSIN.

The vicinity of the "Great Lakes," Superior and Michigan; the elevated plateau between Lake Superior and the Mississippi River; the "pineries;" the heavily timbered land; the "oak openings," and the prairies, may each be considered as distinct botanical districts, within the State, affording plants peculiar to themselves, and giving great richness and variety to our flora.

Mr. THOMAS NUTTALL was the first botanist, so far as I can learn, who visited Wisconsin. He passed Green Bay, by the Portage of the Neenah

(Fox) and Wisconsin rivers, to Prairie du Chien, and thence down the Mississippi, as early as about the year 1813. In his very valuable "Genera of North American Plants," published in 1818, he makes frequent reference to localities in this State, and has described thirteen new species first discovered by him in these regions.

The next notice of our plants was published in 1821, in Sillman's Journal,* by Prof. D. B. DOUGLASS and Dr. JOHN TORREY; being "a notice of the plants collected by Prof. Douglass, in an expedition under Governor CASS, during the summer of 1820, around the Great Lakes and upper waters of the Mississippi." One hundred and ten plants are enumerated, many of them from within the limits of this State; and three are indicated as new species.

In 1823, Major LONG, with a party of scientific gentlemen, under the direction of the Secretary of War, traversed the North West Territory (as Wisconsin was then called); but unfortunately the botanist was detained, and did not join the Expedition. We have, consequently, only an account of a few plants gathered by the late lamented THOMAS SAY, naturalist to the Expedition; these were examined by LEWIS DE SCHWEINITZ, an accomplished botanist of Pennsylvania, and a list of them published in the Narrative of the Expedition.

The next and last published notice of our plants is in Schoolcraft's "Narrative of an Expedition through the Upper Mississippi to Itasca Lake, the actual source of that river, in 1832." This Expedition was accompanied by the late Dr. DOUGLASS HOUGHTON, whose premature death in Lake Superior, while performing his arduous duties of State Geologist of Michigan, is sincerely regretted, not only by all who knew him, but by all the friends of science. The list of plants collected by him in this Expedition, numbers two hundred and forty-seven, of which eight were new and undescribed.

Numerous prepared specimens of Wisconsin plants, have, within the last few years, been distributed among the botanists of our own and other countries; and the critical notices kindly returned by them, have been of much assistance in making this enumeration. It embraces one hundred and thirty-six of the natural orders or families, four hundred and fifty-nine genera, and nine hundred and forty-nine species—all found within thirty miles of the city of Milwaukee, unless other localities are mentioned.

*Vol. IV. p 56.

RANUNCULACEÆ. The Crowfoot Family.

Atragene, Linn.

Americana, Sims. Head of Lake St. Croix. Dr. Parry.

Clematis, Linn. Virgin's Bower.

Virginiana, Linn. Common Virgin's Bower.

Pulsatilla, Tourn. Pasque-flower.

patens, Mill. Anemone patens, Linn.

Anemone, Linn. Wind-flower.

nemorosa, Linn. Low Wind-flower.
Virginiana, Linn. Tall Anemone.
multifida, DC. Shore of Lake Superior. Dr. Z. Pitcher.
Pennsylvanica, Linn.

Hepatica, Dillenius. Liver-leaf.

triloba, Chaix. Round-leaved Hepatica.
acutiloba, DC. Sharped-leaved Hepatica.

Thalictrum, Linn. Meadow Rue.

anemonoides, Michx.
diocum, Linn.
Cornuti, Linn. Meadow Rue.

Ranunculus, Linn. Crowfoot.

aquatilis, Linn. White-Water Crowfoot.
Purshii, Richards. Yellow-Water Crowfoot.
rhomboideus, Goldie.
abortivus, Linn. Small-flowered Crowfoot.
recurvatus, Poir.
Pennsylvanicus, Linn. Bristly Crowfoot.
fascicularis, Muhl.
repens, Linn. Creeping Crowfoot.
Marylandicus, Poir. Hairy Crowfoot.
acris, Linn. Buttercups.

Isopyrum, Linn. Enemion, Raf.

biternatum, Torrey & Gray.

Caltha, Linn. Marsh Marigold.

palustris, Linn. Cowslip.

Coptis, Salisb. Goldthread.

trifolia, Salisb.

Aquilegia, Linn. Columbine.

Canadensis, Linn. Wild Columbine.

Delphinium, Linn. Larkspur.
azureum, Michx. Upper Mississippi, Dr. Houghton.

Hydrastis, Linn. Orange-root.
Canadensis, Linn.

Actæa, Linn. Cohosh.
rubra, Bigel. Red Cohosh.
alba, Bigel. White Cohosh.

MENISPERMACEÆ. The Moonseed Family.

Menispermum, Linn. Moonseed.
Canadense, Linn.

BERBERIDACEÆ. The Barberry Family.

Leontice, Linn. Caulophyllum, Michx.
thalictroides, Linn. Blue Cohash.

Jeffersonia, Barton. Twin-leaf.
diphylla, Pers.

Podophyllum, Linn. May Apple.
peltatum, Linn.

CABOMBACEÆ. The Water-Shield Family.

Brasenia, Schreber. Hydropeltis, Michx.
peltata, Pursh. Water-shield.

NELUMBIACEÆ. The Nelumbo Family.

Nelumbium, Juss. Sacred Bean.
luteum, Willd. Upper Mississippi, Dr. Houghton.

NYMPHÆACÆ. The Water-Lily Family.

Nymphæa, Tourn.
odorata, Ait. White Water-Lily.

Nuphar, Smith.
advena, Ait. Yellow Water-Lily.

SARRACENIACEÆ. The Pitcher Plant Family.

Sarracenia, Linn.
purpurea, Linn. Side-Saddle Flower.

PAPAVERACEÆ. The Poppy Family.

Sanguinaria. Dill. Bloodroot.

Canadensis, Linn.

FUMARIACEÆ. The Fumitory Family.

Dicentra, Bork.

cucullaria, DC. Breeches Flower.
Canadensis, DC. Squirrel Corn.

Corydalis, Linn.

aurea, Willd. Upper Mississippi, Dr. Houghton.
glauca, Pursh. Blue Mounds.

CRUCIFERÆ.

Nasturtium, R. Brown.

palustre, DC.
natans, DC.

Cardamine, Linn.

rhomboidea, DC. Spring Cress.
hirsuta, Linn.
pratensis, Linn.

Dentaria, Linn. Toothwort.

laciniata, Muhl.

Arabis, Linn.

petræa, Lam. Shore of Lake Superior, Dr. Z. Pitcher.
lyratta, Linn.
hirsuta, Scop.
lævigata, DC.
Canadensis, Linn. Sicklepod.

Turritis, Dill. Tower Mustard.

glabra, Linn. Shore of Lake Superior, Dr. Z. Pitcher.
stricta, Graham. Lake Superior, Dr. A. Gray.
brachycarpa, Torr. & Gray. Shore of Lake Superior, Dr. Z. Pitcher.

Erysimum, Linn. Treacle Mustard.

cheiranthoides, Linn. Lake Superior, Dr. Houghton.

Sisymbrium, Linn. Hedge Mustard.

canescens, Nutt.

Sinapis, Tourn. Mustard.

arvensis, Linn.
nigra, Linn.

DRABA, Linn. Whitlow Grass.
Caroliniana, Walt. Near Waukesha, Mr. G. W. Cornwall.

CAMELINA, Crantz. False Flax.
sativa, Crantz.

LEPIDIUM, Linn. Pepperwort.
Virginicum, Linn.

CAPSELLA, Vent. Shepherd's Purse.
Bursa-pastoris, Mœnch.

CAKILE, Tourn. Sea-Rocket.
Americana, Nutt.

CAPPARIDACEÆ. THE CAPER FAMILY.

POLANSIA, Raf.
graveolens, Raf. Near Beloit, Mr. T. McEl Henry.

VIOLACEÆ. THE VIOLET FAMILY.

VIOLA, Linn. Violet.
blanda, Willd.
sagittata, Ait. Marquette County, Mr. John Townley.
cucullata, Ait. Blue Violet.
pedata, Linn.
Muhlenbergii, Torrey.
pubescens, Ait. Yellow Violet.

CISTACEÆ. THE ROCK-ROSE FAMILY.

HELIANTHEMUM, Trum. Rock Rose.
Canadense, Michx.

HUDSONIA, Linn.
tomentosa, Nutt. Lake Superior, Dr. Houghton.

LECHEA, Linn. Pinweed.
minor, Lam. Upper Mississippi, Dr. Houghton.

DROSERACEÆ. THE SUNDEW FAMILY.

DROSERA, Linn. Sundew.
rotundifolia, Linn.
longifolia, Linn. L. Sup. to Upper Miss., Dr. Houghton.
linearis, Goldie. La Pointe, L. Superior, Dr. Houghton.

Parnassia, Tourn.

Carollniana, Michx.
palustris, Linn. South shore of L. Superior, Dr. Z. Pitcher.

HYPERICACEÆ. The St. John's-Wort Family.

Hypericum, Linn. St. John's-Wort.

pyramidatum, Ait. Waukesha, Mr. G. H. Cornwall.
Canadensis, Linn. Lake Superior, Dr. Houghton.
prolificum, Linn. Marquette Co., Mr. J. Townley.

Elodea, Adans.

Virginica, Nutt.

CARYOPHYLLACEÆ. The Pink Family.

§ 1. *Sileneæ.*

Saponaria, Linn. Soapwort.

Vaccaria, Linn. Cow-herb.

Silene, Linn. Catchfly.

stellata, Ait. Starry Campion.
antirrhina, Linn.
noctiflora, Linn.

Lychnis, Tourn. Cockle.

githago, Lam.

§ 2. *Alsineæ.*

Arenaria, Linn. Sandwort.

stricta, Michx.
serpyllifolia, Linn. Waukesha, Mr. G. H. Cornwall.
lateriflora, Linn.

Stellaria, Linn. Chickweed.

media, Smith.
longifolia, Muhl. Stichwort.

Cerastium, Linn.

vulgatum, Linn. Beloit, Mr. T. McEl Henry.
viscosum, Linn. Mouse-Ear.

§ 3. *Illecebreæ.*

Spergula, Linn. Spurrey.

arvensis, Linn. Wauwatosa, Mr. M. Spears.

Anychia, Michx.

dichotoma, Michx. Blue Mounds, I. A. Lapham.

§ 4. *Mollugineæ.*

Mollugo, Linn.

verticilatta, Linn. Carpet Weed.

PORTULACACEÆ. The Purslain Family.

Portulaca, Tourn.

oleracea, Linn. Purslain.

Talinum, Adans.

teretifolium, Pursh. Falls of the St. Croix, Dr. Houghton.

Claytonia, Linn. Spring Beauty.

Virginica, Linn.

MALVACEÆ. The Mallow Family.

Malva, Linn. Mallow.

triangulata, Leavenworth. M. Houghtonii, Torr. & Gray. Upper Mississippi, Dr. Houghton.
rotundifolia, Linn. Dwarf Mallow.

TILIACEÆ. The Linden Family.

Tilia, Linn.

Americana, Linn. Basswood.

LINACEÆ. The Flax Family.

Linum, Linn.

rigidum, Pursh.

GERANIACEÆ.

Geranium, Linn. Cranesbill.

maculatum, Linn.
Carolinianum, Linn.
Robertianum, Linn. L. Superior to Upper Mississippi, Dr. Houghton.

OXALIDACEÆ. The Wood Sorrel Family.

Oxalis, Linn.

violacea, Linn. Rock Prairie and near Beloit.
stricta, Linn.

BALSAMINACEÆ. The Balsam Family.

Impatiens, Linn. Jewel Weed.

pallida, Nutt.
fulva Nutt.

LIMNANTHACEÆ.

FLŒRKEA, Willd. False Mermaid.
proserpinacoides, Willd.

ZANTHOXYLACEÆ. THE PRICKLY ASH FAMILY.

ZANTHOXYLUM, Linn.
Americanum, Mill. PRICKLY ASH.

PTELEA, Linn.
trifoliata, Linn.

ANACARDIACEÆ. THE SUMACH FAMILY.

RHUS, Linn. Sumach.
typhina, Linn.
glabra, Linn.
venenata, DC. Poison Sumach.
Toxicodendron, Linn. Poison Oak.

ACERACEÆ. THE MAPLE FAMILY.

ACER, Linn. Maple.
spicatum, Lam. Mountain Maple.
saccharinum, Wang. Sugar Maple.
rubrum, Linn. Red Maple.

NEGUNDO, Mœnch. Box Maple.
aceroides, Mœnch. Rock River and Sugar River, I. A. L.

CELASTRACEÆ. THE SPINDLE-TREE FAMILY.

STAPHYLEA, Linn. Bladder-Nut.
trifolia, Linn. Beloit. Mr. T. McEl Henry.

CELASTRUS, Linn. Bittersweet.
scandens, Linn.

EUONYMUS, Tourn. Spindle-Tree.
atropurpureus, Jacq. Here called Wahoo.

RAMNACEÆ. THE BUCKTHORN FAMILY.

RHAMNUS, Linn. Buckthorn.
alnifolius, L'Her.

CEANOTHUS, Linn. New Jersey Tea.
Americanus, Linn.
ovalis, Bigel. Beloit, Mr. T. McEl Henry.

VITACEÆ. The Vine Family.

Vitis, Linn. Grape Vine.
- æstivalis, Michx. Summer Grape.
- ripari, Michx. Frost Grape.

Ampelopsis, Michx. Virginia Creeper.
- quinquefolia, Michx.

POLYGALACEÆ. The Milkwort Family.

Polygala, Tourn. Milkwort.
- incarnata, Linn. Beloit, Mr. T. McEl Henry.
- sanguinea, Linn. P. purpurea, Nutt.
- crusiata, Linn.
- verticiliata, Linn.
- Senega, Linn. Seneca Snake-Root.
- polygama, Walt. Waukesha, Mr. G. H. Cornwall.
- paucifolia, Willd.

LEGUMINOSÆ. The Pea Family.

Vicia, Tourn. Vetch.
- Cracca, Linn. Tufted Vetch.
- Americana, Muhl.
- Caroliniana, Waltr. Marquette Co., Mr. J. Townly.

Lathyrus, Linn.
- maritimus, Bigel.
- venosus, Muhl.
- ochroleucus, Hook.
- palustris, Linn.

Apios, Boerh.
- tuberosa, Mœnch. Indian Potato.

Amphicarpæa, Ell.
- monoica, Nut. Wild Bean.

Desmodium, DC. Tick Trefoil.
- nudiflorum, DC. St. Croix, Dr. Parry.
- acuminatum, DC.
- Canadense, DC.

Lespedeza, Michx. Bush Clover.
- violacea, Pers. var. divergens, Beloit, Mr. T. McEl Henry. Var. [sessiliflora Waukesha, I. A. Lapham.
- capitata, Michx.

Astragalus, Linn. Milk Vetch.
- Canadensis, Linn.

PHACA, Linn. Bladder Vetch.
neglecta, Torr. & Gray.

TEPHROSIA, Pers. Hoary Pea.
Virginiana, Pers.

AMORPHA, Linn.
fructicosa, Linn. Beloit, Mr. T. McEl Henry.
canescens, Nutt. Lead Plant.

DALEA, Linn.
laxiflora, Pursh. Near Prairie du Chien, Mr. Nuttall.

PETALOSTEMON, Michx.
violaceum, Michx.
candidum, Michx.
villosum, Nutt. St. Croix, Dr. Parry.

TRIFOLIUM, Linn. Clover.
pratense, Linn. Red Clover.
repens, Linn. White Clover.

LUPINIS, Tourn. Lupine.
perennis, Linn. Wild Lupine.

BAPTISIA, Vent. False Indigo.
australis, R. Brown. B. cærulea, Nutt. On the Neenah River, Dr. [Houghton.
leucantha, Torr. & Gray. B. alba, Hooker.
leucophæa, Nutt.

CASSIA, LINN. Senna.
Chamæcrista, Linn. Beloit, Mr. T. McEl Henry.

GLEDITSCHIA, Linn. Honey Locust.
triacanthus, Linn. Beloit, Dr. S. P. Lathrop.

ROSACEÆ. THE ROSE FAMILY.

§ 1. *Amygdaleæ.*

PRUNUS. Tourn. Plum.
American, Marsh. Yellow Plum.

CERASUS, Tourn. Cherry.
pumilla, Michx. Sand Cherry. Lakes Michigan and Superior, Dr. [Houghton.
Pennsylvanica, Loisel. Bird Cherry.
Virginiana, DC. Choke Cherry.
serotina, DC. Wild Black Cherry.

§ 2. *Rosaceæ.*

Spiræa, Linn. Meadowsweet.

opulifolia, Linn. Nine-Bark.
salicifolia, Linn. Meadowsweet.
tomentosa, Linn. Hardhack. Upper Wisconsin River. I. A. L.

Agrimonia, Tourn. Agrimony.

Eupatoria, Linn.

Geum, Linn. Avens.

Virginianum, Linn. White Avens.
macrophyllum, Willd. Lake Superior, Dr. Z. Pitcher.
strictum, Ait.
rivale, Linn. Water or Purple Avens.
triflorum, Pursh.

Waldsteinia, Willd.

fragaroides, Tratt. Dividing ridge between the St. Croix and Bois [Brule Rivers, Dr. Parry.

Potentilla, Linn.

Norvegica, Linn.
Canadensis, Linn. Fivefinger.
paradoxa, Nutt. Near St. Croix River, Dr. Parry.
arguta, Pursh.
anserina, Linn. Silver-Leaf.
fruticosa, Linn.
tridentata, Ait. Lake Superior, Dr. Houghton.

Comarum, Linn. Marsh Fivefinger.

palustre, Linn.

Fragaria, Tourn. Strawberry.

Virginiana, Ehrh.
vesca, Linn.

Rubus, Linn. Bramble.

Nutkanus, Mocino. Head of Lake Superior, Dr. Houghton.
odoratus, Linn. Lake Superior, Dr. Parry.
canadensis, Linn. Low Blackberry. Marquette Co., Mr. J. Townley.
triflorus, Richards.
strigosus, Michx. Red Raspberry.
occidentalis, Linn. Black Raspberry.
villosus, Ait. Blackberry.
hispidus, Linn. Lake Superior, Dr. Houghton.

Rosa, Tourn. Rose.

lucida, Ehrh. Wild Rose.
blanda, Ait. Lake Superior, Dr. Houghton.

§ 3. *Pomeæ.*

CRATÆGUS, Linn.

coccinea, Linn. White Thorn.
punctata, Jacq.

PYRUS, Linn. Apple.

coronaria, Linn. Crab-Apple.
arbutafolia, Linn. Choke Berry.
Americana DC. Mountain Ash. Brookfield, Waukesha Co., Mr. [G. H. Cornwall.

AMELANCHIER, Medic. June-Berry.

Canadensis, Torr. & Gray.

MELASTOMACEÆ.

RHEXIA, Linn. Deer Grass.

Virginica, Linn. Mauvaise River, C. Whttlesey.

LYTHRACEÆ. THE LOOSESTRIFE FAMILY.

LYTHRUM, Linn. Loosestrife.

alatum, Pursh.

DECODON, Gmel.

verticillatum, Ell. Fish Trap Rapids, Upper St. Croix, Dr. Parry.

ONAGRACEÆ. THE EVENING PRIMROSE FAMILY.

§ 1. *Onagraceæ.*

EPILOBIUM, Linn.

angustifolium, Linn. Willow Herb.
coloratum, Muhl.
palustre, Linn.

ŒNOTHERA, Linn. Evening Primrose.

biennis, Linn.
rhombipetala, Nutt. Near the St. Croix, Dr. Parry.
chrysantha, Michx. Waukesha, Mr. G. H. Cornwall.

GAURA, Linn.

biennis, Linn. Beloit.

LUDWIGIA, Linn.

palustris, Ell. Water Purslain.

CIRCÆA, Tourn. Enchanter's Nightshade.

Lutetiana, Linn.
alpina, Linn.

§ 2. *Halorageæ.*

Myriophyllum, Vaill. Water Milfoil.
spicatum, Linn.
verticillatum, Linn.

Hippuris, Linn. Mares-Tail.
vulgaris, Linn.

CACTACEÆ. The Cactus Family.

Opuntia, Tourn. Prickley Pear.
vulgaris, Mill. Falls of the St. Croix, Dr. Parry.

GROSSULACEÆ. The Gooseberry Family.

Ribes, Linn.
Cynosbati, Linn. Prickly Gooseberry.
hirtellum, Michx. Smooth Gooseberry.
rotundifolium, Michx. Swamp Gooseberry.
floridum, Linn. Wild Black Currant.
rubrum, Linn. Wild Red Currant.

CUCURBITACEÆ. The Cucumber Family.

Echinocystis, Torr. & Gray.
lobata, Torr. & Gray. Wild Cucumber.

CRASSULACEÆ. The House-Leek Family.

Penthorum, Gronov.
sedoides, Linn. Stonecrop.

SAXIFRAGACEÆ. The Saxifrage Family.

Saxifraga, Linn. Saxifrage.
Aizoon, Jacq. Lake Superior, Dr. Z. Pitcher.
Virginiensis, Michx. Lake Superior, Dr. Houghton.
Pennsylvanica, Linn.

Heuchera, Linn. Alum Root.
Americana, Linn.

Mitella, Tourn. Mitrewort.
diphylla, Linn. Currant Leaf.
nuda, Linn.

Chrysosplenium, Tour. Golden Saxifrage.
Americanum, Schw. Lake Superior to Up. Mississippi, Dr. Houghton.

HAMAMELACEÆ. The Witch Hazel Family.

Hamamelis, Linn. Witch Hazel.
Virginica, Linn.

UMBELLIERÆ.

Hydrocotyle, Tourn.
Americana, Linn. Falls of the St. Croix, Dr. Parry.

Sanicula, Tourn.
Marylandica, Linn. Sanicle.

Eryngium, Tourn.
aquaticum, Linn. Rattlesnake-Master.

Polytænia, DC.
Nuttallii, DC.

Heracleum, Linn. Cow Parsnip.
lanatum, Michx.

Pastinaca, Tourn.
sativa, Linn. Wild Parsnip. Poisonous.

Archangelica, Hoffm.
atropurpurea, Hoffm.

Conioselinum, Fischer.
Canadense, Torr. & Gray.

Zizia, Koch. Alexanders.
cordata, Koch.
aurea, Koch.
integerrima, DC.

Bupleurum, Tourn.
rotundifolium, Linn. Introduced.

Cicuta, Linn.
maculata, Linn.
bulbifera, Linn.

Sium, Linn. Water Parsnip.
latifolium, Linn.

Cryptotænia, DC.
Canadense, DC. Honewort.

OSMORHIZA, Raf. Sweet Cicely.

longistylis, DC.
brevistylis, DC. St. Croix, Dr. Parry.

CONIUM, Linn. Poison Hemlock.

maculatum, Linn. Green Bay.

ERIGENIA, Nutt.

bulbosa, Nutt.

ARALIACEÆ. THE SPIKENARD FAMILY.

ARALIA, Linn.

racemosa, Linn. Spikenard.
nudicaulis, Linn. Wild Sarsaparilla.
hispida, Michx. Upper Wisconsin River, I. A. L.

PANAX, Linn.

quinquefolium, Linn. Ginseng.
trifolium, Linn. Ground-Nut.

CORNACEÆ. THE DOGWOOD FAMILY.

CORNUS, Tourn.

alternifolia, Linn. Yellow-Twigged Dogwood.
circinata, L'Her. L. Superior to Upper Miss., Dr. Houghton.
sericea, Linn.
stolonifera, Michx. Red-Twigged Dogwood.
paniculata, L'Her.
Canadensis, Linn. Pudding Berry.

CAPRIFOLIACEÆ. THE HONEYSUCKLE FAMILY.

LINNÆA, Gronov. Twin-Flower.

borealis, Gronov.

SYMPHORICARPUS, Dill.

occidentalis, R. Brown. Wolf-Berry.
racemosus, Michx. Snowberry.

LONICERA, Linn. Honeysuckle.

sempervirens, Ait. Lake Superior, Dr. Houghton.
flava, Sims. Yellow Honeysuckle.
parviflora, Lam.
hirsuta, Eaton. L. Superior to Upper Miss., Dr. Houghton.
ciliata, Muhl.
cærulea, Linn.
oblongifolia, Muhl.

DIERVILLA, Tourn.
trifida, Mœnch.

TRIOSTEUM, Linn. Horse-Gentian.
perfoliatum, Linn.

SAMBUCUS, Linn. Elder.
Canadensis, Linn.
pubens, Michx. Lake Maria, Marquette Co., I. A. L.

VIBURNUM, Linn.
Lentago, Linn.
dentatum, Linn. Arrowwood.
acerifolium, Linn.
Opulus, Linn. V. oxycoccus, Pursh. High Cranberry.

RUBIACEÆ. THE MADDER FAMILY.

§ 1. *Stellatæ.*

GALIUM, Linn.
Aparine, Linn. Goose-Grass.
asprellum, Michx.
trifidum, Linn.
triflorum, Michx.
lanceolatum, Torr. Wild Liquorice.
boreale, Linn.

§ 2. *Cinchoneæ.*

CEPHALANTHUS, Linn. Button Bush.
occidentalis, Linn.

MITCHELLA, Linn. Partridge-Berry.
repens, Linn.

HEDYOTIS, Linn.
ciliolata, Torr.
longifolia, Hook. St. Louis River, Dr. Houghton.

VALERIANACEÆ. THE VALERIAN FAMILY.

VALERIANA, Tourn. Valerian.
edulis, Nutt. V. ciliata, Torr. & Gray.

FEDIA, Gærtn.
Fagopyrum, Torr. & Gray.

COMPOSITÆ.

Vernonia, Schreb.

Noveboracensis, Willd. Upper Mississippi, Dr. Houghton.
fasciculata, Michx. Beloit, Mr. T. McEl Henry.

Liatris, Schreb.

cylindracea, Michx.
scariosa, Willd.
spicata, Willd.

Kuhnia, Linn.

eupatorioides, Linn.

Eupatorium, Tourn.

purpureum, Linn.
perfoliatum, Linn. Thoroughwort.
ageratoides, Linn.

Adenocaulon, Hook.

bicolor, Hook. Lake Superior, Dr. Z. Pitcher.

Aster, Linn. Starwort.

macrophyllus, Linn.
sericeus, Vent.
concolor, Linn. Neenah River, Dr. Houghton.
lævis, Linn.
azureus, Lindl.
Shortii, Boott.
cordifolius, Linn. St. Croix, Dr. Parry.
sagittifolius, Willd.
multiflorus, Ait.
miser, Linn.
tenuifoius, Linn. Upper Mississippi, Dr. Houghton.
præaltus, Poir.
carneus, Nees.
laxifolius, Nees.
puniceus, Linn.
prenanthoides, Muhl.
oblongifolius, Nutt. Upper Mississippi, Torr. & Gray.
Novæ-Angliæ, Linn.
ptarmicoides, Torr. & Gray.

Erigeron, Linn. Fleabane.

Canadense, Linn.
bellidifolium, Muhl. Roberts's Plantain.
Philadelphicum, Linn.
glabellum, Nutt. St. Croix River, Dr. Houghton.
strigosum, Muhl.

DIPLOPAPPUS, Cass.

linariifolius, Hook. Beloit, Mr. T. McEl Henry.
umbellatus, Torr. & Gray.

SOLIDAGO, Linn. Golden Rod.

bicolor, Linn. Falls of St. Croix, Dr. Parry.
latifolia, Linn.
stricta, Ait. St. Croix, Dr. Parry.
speciosa, Nutt.
Virga-aurea, Linn. Lake Superior, Dr. Houghton.
rigida, Linn.
Ohioensis, Riddell.
Riddellii, Frank.
neglecta, Torr. & Gray.
patula, Muhl.
arguta, Ait.
altissima, Linn.
ulmifolia, Muhl.
nemoralis, Ait.
Canadensis, Linn.
lanceolata, Linn.

CHRYSOPSIS, Nutt.

villosa, Nutt. Upper Mississippi, Dr. Houghton.

INERLA, Linn. Elecampane.

heleniurn, Linn. Introduced.

POLYMNIA, Linn.

Canadensis, Linn.

SILPHIUM, Linn.

ternatum, Linn. Waukesha, Mr. G. H. Cornwall.
laciniatum, Linn. Compass Plant.
terebinthinaceum, Linn. Prairie Dock.
trifoliatum, Linn. Waukesha, Mr. G. H. Cornwall.
integrifolium, Michx.
perfoliatum, Linn. Waukesha, Mr. G. H. Cornwall.

PARTHENIUM, Linn.
integrifolium, Linn.

AMBROSIA, Tourn.
trifida, Linn.
artemisiæfolia, Linn.

XANTHIUM, Tourn.
strumarium, Linn.

HELIOPSIS, Pers. Oxeye.
lævis, Pers.

ECHINACEA, Mœnch.
angustifolia, DC. Beloit, Mr. T. McEl Henry.

RUDBECKIA, Linn.
laciniata, Linn.
hirta, Linn.

LEPACHYS, Raf.
pinnata, Torr. & Gray.

HELIANTHUS, Linn. Sunflower.
rigidus, Pers.
occidentalis, Riddell.
giganteus, Linn.
decapetalus, Linn.
strumosus, Linn.

COREOPSIS, Linn.
trichosperma, Michx.
palmata, Nutt.
lanceolata, Linn. Two Rivers, Manitowoc Co.

BIDENS, Linn. Beggar-Ticks.
frondosa, Linn.
cernua, Linn.
chrysanthemoides, Michx.
Beckii, Torr. St. Croix River, Dr. Houghton.

HELENIUM, Linn.
autumnale, Linn.

MARUTA, Cass. May-Weed.
Cotula, DC.

ACHILLEA, Linn. Yarrow.
Millefolium, Linn.

TANACETUM, Linn. Tansey.
Huronensis, Nntt. Lake Superior, Dr. Houghton.

ARTEMISIA, Linn. Wormwood.
Canadensis, Michx.
Ludoviciana, Nutt.
biennis, Willd.

GNAPHALIUM, Linn.
decurrens, Ives. Lake Superior, Dr. Parry.
polycephalum, Michx.
uliginosum, Linn. Elkhorn, Walworth Co.

ANTENNARIA, Gærtn.

dioica, Gærtn.
plantaginifolia, Hook.

ERECHTHITES, Raf. Fireweed.

hieracifolia, Raf. Falls of St. Croix, Dr. Parry.

CACALIA, Linn. Indian Plantain.

suaveolens, Linn.
reniformis, Muhl.
atriplicifolia, Linn.
tuberosa, Nutt.

SENECIO, Linn.

vulgaris Linn.
aureus, Linn. Ragwort.
tomentosus, Michx. Beloit, Mr. T. McEl Henry.

CERSIUM, Tourn.

lanceolatum, Scop. Thistle, introduced.
Pitcheri, Torr. & Gray. Two Rivers, Manitowoc Co.
Virginianum, Michx.
muticum, Michx.
pumilum, Spreng.
arvense, Scop. Canada Thistle, introduced.

LAPPA, Tourn.

major, Gærtn. Burdock.

CYNTHIA, Don.

Virginica, Don.

HIERACIUM, Tourn. Hawkweed.

Canadense, Michx.
scabrum, Michx.
Gronovii, Linn.
longipilum, Torrey. Blue Mounds.

NABALUS, Cass.

albus, Hook.
racemosus, Hook.

TROXIMON, Nutt.

cuspidatum, Pursh.

TARAXACUM, Haller.

Dens-leonis, Desf. Dandelion.

LACTUCA, Tourn.

elongata, Muhl.

Sonchus, Linn. Sow-Thistle.

oleraceus, Linn.

LOBELIACEÆ. The Lobella Family.

Lobella, Linn.

cardinalis, Linn. Cardinal Flower.
siphilitica, Linn. Blue Lobelia.
inflata, Linn. Indian Tobacco.
spicata, Lam.
Kalmii, Linn.

CAMPANULACEÆ. The Bell-Flower Family.

Campanula, Tourn.

rotundifolia, Linn. Hair-Bell.
aparinoides, Pursh.
Americana, Linn.

Speculiaria, Heist.

perfoliata, A. DC. Marquette Co., Mr. J. Townley.

ERICACEÆ. The Heath Family.

§ 1. *Vaccinieæ.*

Gaylussacia, H. B. & K. Huckleberry.

resinosa, Torr. & Gray. Black Huckleberry.

Vaccinium, Linn.

macrocarpon, Ait. Cranberry.
Pennsylvanicum, Lam. Blue Huckleberry.
Canadense, Kalm. Blueberry. Falls of St. Croix, Dr. Parry.

Chiogenes, Salisb.

hispidula, Torr. & Gray.

§ 2. *Ericineæ.*

Arctostaphylos, Adans.

Uva-ursi, Spreng. Bear-Berry.

Gaultheria, Kalm.

procumbens, Linn. Winter-Green.

Epigæa, Linn.

repens, Linn. Mayflower. Lemonwier River.

Andromeda, Linn.

polifolia, Linn.
calyculta, Linn.

KALMIA, Linn. Laurel.

glauca, Ait. Lake Superior, Prof. Douglass.

LEDUM, Linn. Labrador Tea.

latifolium, Ait. Dells of the Wisconsin River.

§ 3. *Pyroleæ.*

PYROLA, Linn.

rotundifolia, Linn.
asarifolia, Michx.
elliptica, Nutt. Shin-Leaf.
secunda Linn.

MONESES, Salisb. Pyrola, Linn.

uniflora. Mauvaise River, Dr. Houghton.

CHIMAPHILA, Pursh.

umbellata, Nutt. Prince's Pine.

§ 4. *Monotropeæ.*

HYPOPITYS, Dill.

lanuginosa, Nutt. Lake Superior, Dr. Parry.

MONOTROPA, Gronov. Indian Pipe.

uniflora, Linn.

AQUIFOLIACEÆ. THE HOLLY FAMILY.

PRINOS, Linn. Winter-Berry.

verticillatus, Linn.

NEMOPANTHES, Raf. Lemonwier River.

Canadensis, DC.

PLANTAGINACEÆ. THE PLANTAIN FAMILY.

PLANTAGO, Linn. Plantain.

major, Linn.
cordata, Lam.

PRIMULACEÆ. THE PRIMROSE FAMILY.

PRIMULA, Linn. Primrose.

farinosa, Linn. Lake Superior, Dr. Houghton.
Mistassinica, Michx. Dells of the Wisconsin, Mr. B. F. Mills.

DODECATHEON, Linn.

Meadia, Linn. Shooting Star.

TRIENTALIS, Linn.

Americana, Pursh.

LYSIMACHIA, Linn. Loosestrife.

stricta, Ait. Marquette Co., Mr. John Townley.
quadrifolia, Linn.
ciliata, Linn.
lanceolata, Walt. L. hybrida, Michx. Brookfield, Mr. M. Spears.
angustifolia, Lam. L. revoluta, Nutt.

NAUMBURGIA, Mœnch.

thyrsiflora, Reich.

LENTIBULACEÆ. THE BLADDERWORT FAMILY.

UTRICULARIA, Linn.

purpurea, Walt. Lac Chetac, Dr. Houghton.
vulgaris, Linn.
minor, Linn.
intermedia, Hayne. Brookfield, Mr. M. Spears.
cornuta, Michx. Lake Superior, Dr. Houghton.

OROBANCHACEÆ. THE BROOM RAPE FAMILY.

EPIPHEGUS, Nutt. Beech Drops.

Virginiana, Bart.

CONOPHOLIS, Wallr. Orobanche, Linn.

Americana, Wallr.

APHYLLON, Mitchell.

uniflorum, Tor. &. Gr. Marquettee Co., Mr. J. Townley.

ACANTHACEÆ. THE ACANTHUS FAMILY.

DIPTERACANTHUS, Nees. Ruellia, Linn.

hybridus, Nees. Beloit, Mr. T. McEl Henry.

SCROPHULARIACEÆ. THE FIGWORT FAMILY.

VERBASCUM, Linn. Mullen.

Thapsus, Linn. Introduced.

LINARIA, Tourn. Toad Flax.

vulgaris, Mill. Waukesha, Mr. G. H. Cornwall.

SCROPHULARIA, Linn. Figwort.

nodosa, Linn. S. Marylandica.

COLLINSIA, Nutt.
verna, Nutt.
parviflora, Dougl. South shore of Lake Superior, Dr. Z. Pitcher.

CHELONE, Tourn. Snake Head.
glabra, Linn.

PENTSTEMON, Mitchell.
pubescens, Solander.

MIMULUS, Linn. Monkey Flower.
ringens, Linn.
Jamesii, Torr. & Gray.

GRATIOLA, Linn.
virginiana, Linn. Wisconsin River, Grant Co.

SYNTHYRIS, Benth.
Houghtoniana, Benth.

VERONICA, Linn. Speedwell.
Virginica, Linn. Leptandra, Nutt.
Angalis, Linn.
scutellata, Linn.
peregrina, Linn.

GERARDIA, Linn.
purpurea, Linn.
tenuifolia, Vahl.
setacea, Waltr.
pedicularia, Linn. Wisconsin River, Prof. Douglass. Neenah River, Dr. [Houghton.
grandiflora, Benth.

CASTILLEJA, Mutis. Painted Cup.
coccinea, Spreng.
sessiliflora, Pursh. Euchroma grandiflora, Nutt.

PEDICULARIS, Tourn. Lousewort.
Canadensis, Linn.
lanceolata, Michx.

MELAMPYRUM, Tourn. Cow Wheat.
pratense, Linn. M. Americanum, Michx.

VERBENACEÆ. THE VERVAIN FAMILY.

VERBENA, Linn. Vervain.
hastata, Linn.
urticifolia, Linn.
angustifolia, Linn.
bracteosa, Michx.
stricta, Vent. Upper Mississippi, Dr. Houghton.

PHRYMA, Linn. Lopseed.
leptostachya, Linn.

LABIATÆ. THE MINT FAMILY.

MENTHA, Linn. Mint.
Canadensis, Linn. M. borealis, Michx.

LYCOPUS, Linn.
Virginicus, Linn. Bugle Weed.
sinuatus, Ell. L. Europæus, Ph.

MICROMERIA, Benth.
glabella, Benth. Hedeoma glabra, Nutt. Lake Michigan to Lake Superior and Upper Mississippi, Dr. Houghton.

BLEPHILLA, Raf.
ciliata, Raf.

MONARDA, Linn. Horse Mint.
fistulosa, Linn.
punctata, Linn.

NEPETA, Linn. Catnip.
cataria, Linn.

LOPANTHUS, Benth.
anisatus, Benth. Falls of St. Croix, Dr. Parry.
nepetoides, Benth.
scrophulariæfolius, Benth.

PYCNANTHEMUM, Michx. Mountain Mint.
lanceolatum, Pursh.

PRUNELLA, Linn. Heal-All.
vulgaris, Linn.

SCUTELLARIA, Linn. Scullcap.
parvula, Michx.
galericulata, Linn.
lateriflora, Linn. Mad Dog Scullcap.
cordifolia, Muhl.

PHYSOSTEGIA, Benth. Dracocephalum, Linn.
Virginiana, Benth. Dragon-Head.

LEONURUS, Linn. Motherwort.
Cardiaca, Linn.

GALEOPSIS, Linn.
tetrahit, Linn. Lake Superior, Dr. Parry.

STACHYS, Linn. Horse Nettle.
aspera, Michx.

TEUCRIUM, Linn. Germander.
Canadense, Linn.

BORAGINACEÆ. THE BORAGE FAMILY.

ONOSMODIUM, Michx.
Virginianum, DC. O. hispidum, Mx.

LITHOSPERMUM, Tourn. Gromwell.
officinale, Linn.
hirtum, Lehm. Marquette Co., Mr. John Townley.
canescens, Lehm. Batschia canescens, Mx.

PENTALOPHUS, DC. Batschia, Nutt.
longiflorus, DC. Beloit, Mr. T. McEl Henry.

MERTENSIA, Roth. Pulmonaria, Linn. Lungwort.
Virglnica, DC. Beloit, Mr. McEl Henry.
Myostis, Linn.
Stricta, Linn. Marpuette Co., Mr. J. Townley.

ECHINOSPERMUM, Swartz.
Lappula, Lehm.

CYNOGLOSSUM, Tourn. Hound's-Tongue.
officinalis, Linn.
Virginicum, Linn.
Morisoni, DC.

HYDROPHYLLACEÆ. THE WATER-LEAF FAMILY.

HYDROPHYLLUM, Linn. Water-Leaf.
Virginicum, Linn.
appendiculatum, Michx. Beloit, Mr. T. McEl Henry.

POLEMONIACEÆ.

POLEMONIUM, Tourn.
reptans, Linn. Jacob's Ladder.

PHLOX, Linn.
glaberrima, Linn. P. revoluta, Eaton.
pilosa, Linn.
divaricata, Linn.

CONVOLVULACEÆ.

Calystegia, R. Brown. Convolvulus, Linn.
 sepium, R. Brown.
 spithamæa, Pursh.

Cuscuta, Tourn.
 Gronovii, Willd. C. Americana, Pursh.

SOLANACEÆ. The Nightshade Family.

Datura, Linn. Jamestown Weed.
 Stramonium, Linn. Introduced.

Nicandra, Adans.
 physaloides, Gærtn.

Physalis, Linn. Ground Cherry.
 viscosa, Linn.

Solanum, Linn.
 nigrum, Linn. Night Shade.

GENTIANACEÆ. The Gentian Family.

Gentiana, Linn.
 quinqueflora, Lam.
 crinita, Fræl.
 detonsa, Fries.
 rubricaulis, Keating. Waukesha, Mr. G. H. Cornwall.
 saponaria, Linn.

Halenia, Borkh. Swertia, Linn.
 deflexa, Griesb. Mauvaise and Bois Brule Rivers, Dr. Houghton.

Menyanthes, Tourn. Buckbean.
 trifoliata, Linn.

APOCYNACEÆ. The Dogbane Family.

Apocynum, Tourn.
 androsæmifolium, Linn.
 hypericifolium, Ait.

ASCLEPIADACEÆ. The Milkweed Family.

Asclepias, Linn.
 Cornuti, Decaisne. A. Syriaca, Linn.
 phytolaccoides, Pursh.

(Asclepias.)

variegata, Linn.
obtusifolia, Michx.
rubra, Linn. Waukesha, Mr. G. H. Cornwall.
incarnata, Linn.
verticillata, Linn. Beloit, Dr. S. P. Lathrop.
tuberosa, Linn. Butterfly Weed.
lanuginosa, Nutt. Eagle Prairie, I. A. Lapham.

Acerates, Ell.

viridiflora, Ell.
longifolia, Ell. Marquette Co., Mr. J. Townley.

OLEACEÆ. The Olive Family.

Fraxinus, Tourn. Ash.

Americana, Linn. White Ash.
sambucifolia, Lam. Black Ash.

ARISTOLOCHIACEÆ. The Birthwort Family.

Asarum, Tourn.

Canadense, Linn. Colt's Foot.

CHENOPODIACEÆ. The Goosefoot Family.

Salsola, Linn. Saltwort.

kali, Linn. Lake Shore, Milwaukee.

Chenopodium, Linn.

album, Linn. Pigweed.
hybridum, Linn Goosefoot.

Blitum, Tourn.

capitatum, Linn. Indian Strawberry.

Ambrina, Spach.

Botrys, Moquin. Brookfield, Mr. G. H. Cornwall.

Acnida, Mitchell. Water Hemp.

cannabina, Linn. St. Croix, Dr. Parry.

AMARANTHACEÆ. The Amaranth Family.

Amaranthus, Linn.

altissimus, Riddell.
hybridus, Linn. Red Root.
hypocondriacus, Linn. Prince's Feather.
tamariscinus, Nutt.

NYCTAGINACEÆ. The Nyctago Family.

Allionia, Linn.

albida, Wallr. St Croix River, Dr. Houghton.
nyctaginea, Michx. St. Croix River, Dr. Houghton.

Oxybaphus angustifolius, Torr. St. Croix, Dr. Parry.

POLYGONACEÆ. The Buckwheat Family.

Polygonum, Linn.

Pennsylvanicum, Linn.
Persicaria, Linn.
Hydropiper, Linn. P. punctatum, Ell.
hydropiperoides, Michx.
amphibium, Linn.
aviculare, Linn. Knot-Grass.
articulatum, Linn. Lakes Michigan and Superior, Dr. Houghton.
Virginianum, Linn.
sagittatum, Linn.
Convolvulus, Linn.
cilinode, Michx. Lake Superior, Dr. Houghton.
dumetorium, Linn. P. scandens, L.

Rumex, Linn. Dock.

Britannica, Linn.
crispus, Linn. Curled Dock.
Acetosella, Linn. Sorrel.
hydrolapathum, Hudson. St. Croix, Dr. Parry.

THYMELEACEÆ. The Mezereum Family.

Dirca, Linn. Leatherwood.

palustris, Linn.

ELÆAGNACEÆ. The Oleaster Family.

Shepherdia, Nutt.

Canadensis, Nutt.

SANTALACEÆ. The Sandal Wood Family.

Comandra, Nutt.

umbellata, Nutt.

ULMACEÆ. The Elm Family.

Ulmus, Linn. Elm.

Americana, Linn. White Elm.
fulva, Michx. Slippery Elm.

CELTIS, Tourn.
occidentalis, Linn. Hack Berry.

SAURURACEÆ. THE LIZARD'S TAIL FAMILY.

SAURURUS, Linn. Lizard's Tail.
cernuus, Linn. Upper Mississippi, Dr. Houghton.

CALLITRICHACEÆ.

CALLITRICHE, Linn.
verna, Linn.

EUPHORBIACEÆ. THE SPURGE FAMILY.

EUPHORBIA, Linn.
corollata, Linn.
maculata, Linn.
hypericifolia, Linn. St. Croix, Dr. Parry.

EMPETRACEÆ. THE CROWBERRY FAMILY.

EMPETRUM, Tourn. Crowberry.
nigrum, Linn. Lake Superior, Dr. Houghton.

JUGLANDACEÆ. THE WALNUT FAMILY.

JUGLANS, Linn. Walnut.
cinerea, Linn. Butternut or White-Walnut.
nigra, Linn. Black-Walnut.

CARYA, Nutt. Hickory.
alba, Nutt. Shag-Bark Hickory.
glabra, Torr. C. porcina, Nutt. Pignut Hickory.

CUPULIFERÆ. THE OAK FAMILY.

QUERCUS, Linn. Oak.
alba, Linn. White Oak.
obtusilpba, Michx. Q. stellata, Willd. Post Oak. Upper Mississippi, [Dr. Houghton.
macrocarpa, Michx. Burr Oak.
bicolor, Willd. Swamp White Oak.
Prinos, Linn. Swamp Chestnut Oak. Near Janesville, I. A. L.
rubra, Linn. Red Oak.
palustris, Linn. Pin Oak.

FAGUS, Tourn. Beech.
ferruginea, Ait.

Corylus, Tourn. Hazel-Nut.

Americana, Walt.
rostrata, Ait.

Carpinus, Linn. Hornbeam.

Americana, Michx.

Ostrya, Micheli. Iron Wood.

Virginica, Willd.

MYRICACEÆ. The Sweet Gale Family.

Myrica, Linn. Sweet Gale.

Gale, Linn. Lake Superior, Dr. Houghton.

Comtonia, Solander. Sweet Fern.

asplenifolia, Ait. Dells of Wisconsin River.

BETULACEÆ. The Birch Family.

Betula, Tourn. Birch.

papyracea, Ait. Canoe Birch.
pumila, Linn. B. glandulosa, Mx. Low Birch.

Alnus, Tourn. Alder.

incana, Willd. A. glauca, Mx. St. Croix River, Dr. Houghton.
serrulata, Willd.

SALICACEÆ. The Willow Family.

Salix, Tourn. Willow.

candida, Willd.
tristis, Ait.
humilis, Marshall. S. Muhlenbergiana, Barr.
discolor, Muhl.
eriocephala, Michx. S. prinoides, Ph. Mauvaise River, Dr. Houghton.
sericea, Marshall. S. Grisea, Willd.
rostrata, Richardson.
lucida, Muhl.
longifolia, Muhl. Upper Mississippi, Dr. Houghton.
pedicellaris, Pursh. St. Croix, Dr. Parry.

Populus, Tourn. Poplar.

tremuloides, Michx. Quaking Aspen.
grandidentata, Michx.
candicans, Ait. Balm of Gilead.

PLATANACEÆ. The Plane-Tree Family.

Platanus, Linn. Sycamore, Buttonwood.

occidentalis, Linn.

URTICACEÆ. The Nettle Family.

Humulus, Linn. Hop.
Lupulus, Linn.

Urtica, Tourn. Nettle.
dioica, Linn.
Canadensis, Linn.

Pilea, Lindl. Adike, Raf.
pumila, Linn.

Parietaria, Tourn. Pellitory.
Pennsylvanica, Muhl.

CONIFERÆ. The Pine Family.

Pinus, Tourn. Pine.
Banksiana, Lambert. Dells of the Wisconsin.
resinosa, Ait. Red Pine.
mitis, Michx. Yellow Pine. Dane County, I. A. L.
Strobus, Linn. White Pine.

Abies, Tourn. Spruce.
balsamea, Marsh. Balsam Fir. Manitowoc, I. A. L.
Canadensis, Michx. Hemlock. Manitowoc, I. A. L.
nigra, Poir. Black Spruce. Lake Superior, Dr. Houghton. Upper [Mississippi, Prof. Douglass.
alba, Michx. White Spruce. Upper St. Croix, Dr. Parry.

Larix, Tourn. Larch.
Americana, Michx. Tamarack.

Thuja, Tourn.
occidentalis, Linn. White Cedar.

Juniperus, Linn. Juniper.
communis, Linn.
Virginiana, Linn. Red Cedar.

Taxus, Tourn. Yew.
Canadensts, Willd.

ARACEÆ. The Arum Family.

Arum, Linn. Indian Turnip.
triphyllum, Linn.

Calla, Linn. Water Arum.
palustris, Linn.

Symplocarpus, Salisb. Skunk Cabbage.
  fœtidus, Salisb.

Acorus, Linn. Sweet Flag.
  calamus, Linn.

LEMNACEÆ. The Duckweed Family.

Lemna, Linn. Duckweed.
  minor, Linn.
  trisulca, Linn.

TYPHACEÆ. The Cat-Tail Family.

Typha, Tourn. Cat-Tail.
  latifolia, Linn.

Sparganium, Tourn.
  ramosum, Hudson.
  natans, Linn. St. Croix, Dr. Parry.

NAIDACEÆ. The Pondweed Family.

Potamogeton, Tourn. Pondweed.
  amplifolius, Tuckerman.
  perfoliatus, Linn.
  compressus, Linn. P. zosterifolius, Schum.
  pauciflorus, Pursh. P. gramineus, Mx.
  pectinatus, Linn.
  heterophyllns, Schreber.

ALISMACEÆ. The Water Plantain Family.

§ 1. *Juncagineæ.*

Triglochin, Linn.
  elatum, Nutt.

Scheuchzeria, Linn.
  palustris, Linn.

§ 2. *Alismeæ.*

Alisma, Linn. Water Plantain.
  Plantago, Linn.

Echinodorus, Richard.
  subulatus, Engleman. St. Croix, Dr. Parry.

Sagittaria, Linn.
  sagittifolia, Linn. Arrow-Leaf.

HYDROCARDIACEÆ. The Frog's-Bit Family.

Udora, Nutt. Water Weed.
    Canadensis, Nutt.

Vallisneria, Mitcheli. Tape Grass.
    spiralis, Linn.

ORCHIDACEÆ. The Orchis Family.

Microstylis, Nutt.
    monophyllas, Lindl. St. Croix, Dr. Parry.
    ophioglossoides, Nutt.

Liparis, Richards.
    liliifolia, Richards.
    Lœselii, Richards. Waukesha, Mr. G. H. Cornwall.

Corallorhiza, Haller.
    multiflora, Nutt. Waukesha. Mr. G. H. Cornwall.

Aplectrum, Nutt. Putty Root.
    hyemale, Nutt.

Orchis, Linn.
    spectabilis, Linn.

Platanthera, Richards.
    orbiculata, Lindl.
    Hookeri, Lindl.
    bracteata, Torr.
    dilatata, Lindl. St. Croix, Dr. Parry.
    hyperborea, Lindl.
    leucophæa, Nutt.
    psycodes, Gray. O. fimbriata Pursh.

Arethusa, Gronov.
    bulbosa, Linn. Lemonwier River.

Pogonia, Juss.
    ophioglossoides, Nutt. Waukesha, Mr. G. H. Cornwall.

Calopogon, R. Brown.
    pulchellus, R. Br.

Spiranthes, Richards. Lady's Tresses.
    gracilis, Bigelow.
    cernua, Richards

Goodyera. R. Brown.
    pubescens, R. Brown.

CYPRIPEDIUM, Linn. Lady's Slipper.

pubescens, Willd. Yellow Lady's Slipper.
parviflorum, Salisb. Small Yellow Lady's Slipper.
candidum, Muhl. White Lady's Slipper.
spectabile, Swartz. Moccason Flower.
acaule, Ait. Purple Lady's Slipper.

AMARYLLIDACEÆ. THE AMARYLLIS FAMILY.

HYPOXIS, Linn. Star Grass.

erecta, Linn.

HÆMODORACEÆ. THE BLOODWORT FAMILY.

ALETRIS, Linn. Star Grass.

farinosa, Linn. Marquette Co., Mr. J. Townley.

IRIDACEÆ. THE IRIS FAMILY.

IRIS, Linn.

versicolor, Linn. Blue Flag.
lacustris, Nutt.

SISYRINCHIUM, Linn. Blue-eyed Grass.

Bermudianum, Linn.

DIOSCORACEÆ. THE YAM FAMILY.

DIOSCOREA, Plumier.

villosa, Linn.

SMILACEÆ. THE GREEN BRIER FAMILY.

§ 1. *Smilaceæ.*

SMILAX, Tourn.

rotundifolia, Linn. Green Brier.
herbacea, Linn.
lasioneuron, Hook.

§ 2. *Trilliaceæ.*

TRILLIUM, Linn.

cernuum, Linn. T. pendulum, Muhl.
grandiflorum, Salisb.
nivale, Riddell.
recurvatum, Beck.
sessile, Linn.

MEDEOLA, Gronov.

Virginica, Linn.

LILIACEÆ. The Lily Family.

§ 1. *Asparageæ.*

Asparagus, Linn.
officinale, Linn. Introduced.

Polygonatum, Tourn. Solomon's Seal.
pubescens, Pursh.

Smilacina, Desf.
racemosa, Desf.
stellata, Desf.
trifolia, Desf.
bifolia, Ker.

Clintonia, Raf.
borealis, Raf.

§ 2. *Asphodeleæ.*

Scilla, Linn.
esculenta, Ker. Beloit, Dr. S. P. Lathrop.

Allium, Linn. Garlic.
Canadense, Kalm.
cernuum, Roth.
tricoccum, Ait. Leek.

§ 3. *Tulipaceæ.*

Lilium, Linn. Lily.
Philadelphicum, Linn. Orange Lily.
Canadense, Linn. Nodding Lily.

Erythronium, Linn. Dog's Tooth Violet.
Americanum, Smith.
albidum, Nutt.

MELANTHACEÆ. The Colchicum Family.

§ 1. *Uvularieæ.*

Uvularia, Linn. Bellwort.
grandiflora, Smith.
sessilifolia, Linn. Marquette Co., Mr. John Townley.

Streptopus, Michx.
roseus, Michx.

§ 2. *Melanthieæ.*

Zygadenus, Michx.
glaucus, Nutt.

Tofieldia, Hudson.

glutinosa, Willd.

JUNCACEÆ. The Rush Family.

Luzula, DC. Woodrush.

pilosa, Willd.
campestris, Linn.

Juncus, Linn. Rush.

effusus, Linn.
Balticus, Willd.
scirpoides, Lam. T. polycephalus, Mx.
acuminatus, Michx.
tenuis, Willd.
conradi, Tuckerman. St. Croix, Dr. Parry.

PONTEDERIACEÆ. The Pickerel-Weed Family.

Pontederia, Linn. Pickerel-Weed.

cordata, Linn.

COMMELYNACEÆ. The Spiderwort Family.

Tradescantia, Linn. Spiderwort.

Virginica, Linn.

CYPERACEÆ. The Sedge Family.

Cyperus, Linn.

diandrus, Torr.
inflexus, Muhl. Bass Lake, Dane Co., I. A. Lapham.
schweinitzii, Torr. St. Croix, Dr. Parry.
strigosus, Linn.
filiculmis, Vahl. Upper Mississippi, Dr. Houghton.

Dulichium, Richard.

spathaceum, Pers.

Eleocharis, R. Brown.

obtusa, Schultz.
palustris, R. Brown.
tenuis, Schultz.
acicularis, R. Brown.

Scirpus, Linn.

pungens, Vahl. S. triqucter, Mx.
lacustris, Linn. Bulrush.
fluviatilis, Gray. S. maratimus, var. Torr.
atrovirens, Muhl.
lineatus, Michx.
Eriophorum, Michx.

ERIOPHORUM, Linn. Cotton Grass.

alpinum, Linn. Lake Superior, Dr. Houghton.
vaginatum, Linn.
Virginicum, Linn.
polystachyum, Linn.
angustifolium, Richard.

SCLERIA, Linn.

triglomerata, Mx. Beloit, Dr. S. P. Lathrop.

CAREX, Linn, Ledge.

aurea, Nutt.
anceps, Willd.
blanda, Dewey.
bromoides, Schk.
Buxbaumii, Wahl.
bullata, Schk.
chordorrhiza, Ehrh.
comosa, Boott.
Deweyana, Schw.
eburnea, Boott.
festucacea, Schk.
gracilis, Ehrh. C. disperma, Dewey.
granularis, Muhl.
gracillima, Schw.
grisea, Wahl. Beloit, Dr. S. P. Lathrop.
hystriciana, Willd.
intermedia, Good.
irrigua, Smith.
intumescens, Rudge.
laxiflora, Lam.
lanuginosa. Michx. C. Pellita, Muhl.
lacustris, Willd.
lupulina, Muhl.
longirostris, Torr. Blue Mounds, I. A. Lapham.
miliacea, Muhl. Beloit, Dr. S. P. Lathrop.
mirabilis, Dew.
oligosperum, Michx.
plantaginea, Lam.
polytrichoides, Muhl.
panicea, Linn. C. Meadii, Dew.
Pennsylvanica, Lam.
pubescens, Muhl. Brookfield, Mr. M. Spears.
rosea, Schk.
rigida, Good. C. saxatalis. Lake Superior, Dr. Houghton.
siccata, Dewey. Beloit, Dr. S. P. Lathrop.
stipata, Muhl.
sparganoides, Nuhl.
stellulata, Good.

(CAREX.)

straminea, Schk.
stricta, Lam. C. acuta, Muhl. C. angustata, Boott.
teretiuscula, Good.
tenera, Dew.
vulpinoidea, Michx. C. multiflora, Muhl.

GRAMINEÆ. THE GRASS FAMILY.

LEERSIA, Solander. White Grass.

oryzoides, Swartz. Cut Grass.
Virginica, Willd. White Grass.

ZIZANIA, Gronov. Wild Rice.

aquatica, Linn.

ALOPECURUS, Linn. Fox-Tail Grass.

aristulatus, Mx.

PHLEUM, Linn. Timothy.

pratense Linn.

AGROSTIS, Linn. Bent-Grass.

scabra, Willd. Thin Grass. A. Michauxii, Trin.
vulgaris, With. Redtop.

CINNA, Linn.

arundinacea, Linn.

MUHLENBERGIA, Schreber.

glomerata, Trin. Polypogon racemosa, Nutt.
Mexicana, Trin. Agrostis lateriflora, Mx.
Willdenovii, Trin. Agrostis tenuiflora, Willd.

BRACHYELYTRUM, Beauv.

aristatum, Beauv. Muhlenbergia erecta, Schreb.

CALAMAGROSTIS, Adans.

Canadensis, Beauv.

ORYZOPSIS, Michx. Mountain Rice.

asperifolia, Michx.
melanocarpa, Muhl. Piptatherum nigrum, Torr.

STIPA, Linn.

avenacea, Linn.

ARISTIDA, Linn.

tuberculosa, Nutt. St. Croix, Dr. Parry.

SPARTINA, Schreb. Cord Grass.
cynosuroides, Willd.

BOUTELOUA, Lagasca. Atheropogon, Muhl.
racemosa, Lag. A. apludoides, Michx.
papillosa, Gray. Cassville, Dr. Houghton.

KŒLERIA, Pers.
cristata, Pers. K. nitida, Nutt.

REBOULEA, Kunth.
obtusata, Kœleria truncata Torr.

MELICA, Linn. Melic-Grass.
speciosa, Muhl. Beloit, Dr. S. P. Lathrop.

GLYCERIA, R. Brown.
Canadensis, Trin. Poa Canadensis.
nervata, Trin. Poa nervata, Willd.
fluitans, R. Brown.
aquatica, Smith.

POA, Linn. Meadow Grass.
compressa, Linn. Blue Grass. Beloit, Dr. S. P. Lathrop. Introduced.
debilis, Torr.
nemoralis, Linn.
serotina, Ehrh.
trivialis, Linn.
pratensis, Linn.

ERAGROSTIS, Beauv.
megastachya, Link. Poa eragrostis, Linn.

FESTUCA, Linn.
nutans, Willd.
ovina, Linn. Two Rivers, Manitowoc Co.

BROMUS, Linn. Brome Grass.
ciliatus, Linn.
purgans, Linn.
secalinus, Linn. Chess.

PHRAGMITES, Trin. Reed.
communis, Trin.

TRITICUM, Linn. Wheat.
repens, Linn. Couch-Grass.
dasystachyum, Gray. Two Rivers.
caniuum, Linn. Beloit, Dr. S. P. Lathrop.

ELYMUS, Linn. Lime-Grass.

Virginicus, Linn.
Canadensis, Linn.
glaucifolius, Muhl.
striatus, Willd.
hystrix, Linn. Bottle-Brush Grass.

HORDEUM, Linn. Barley.

jubatum, Linn. Squirrel-Tail Grass.

AIRA, Linn. Hair-Grass.

cæspitosa, Linn.

DANTHONIA, DC. Wild-Oat Grass.

spicata, Beauv.

AVENA, Linn. Oat.

striata, Michx. Trisetum purpurascens, Torr.

HOLCUS, Linn. Velvet Grass.

lanatus, Linn. Upper Mississippi, Dr. Houghton.

HIEROCHLOA, Gmelin. Seneca Grass.

borealis, Rœm. & Sch.

MILIUM, Linn. Millet-Grass.

effusum, Linn.

PANICUM, Linn. Panic Grass.

capillare, Linn.
virgatum, Linn.
latifolium, Linn.
clandestinum, Linn.
dichotomum, Linn.
pubescens, Lam.
crus-galli, Linn. Barn-Yard Grass.
longisetum, Torr. Neenah River, Prof. Douglass.
xanthophysum, Gray. Beloit. Dr. S. P. Lathrop.
depauperatum, Muhl. Beloit, Dr. S. P. Lathrop.

SETARIA, Beauv.

glauca, Beauv.

CENCHRUS, Linn. Burr-Grass.

tribuloides, Linn. Upper Mississippi, Dr. Houghton.

ANDROPOGON, Linn. Beard-Grass.

furcatus, Muhl.
scoparius, Michx.

SORGHUM, Pers.

nutans. Andropogon nutans, Linn.

EQUISETACEÆ. THE HORSE-TAIL FAMILY.

EQUISETUM, Linn. Horse-Tail.

arvense, Linn.
eburnum, Schreb. Lake Superior, Dr. Torrey.
sylvaticum, Linn.
limosum, Linn.
hyemale, Linn. Scouring Rush.
lævigatum, Braun.
variegatum, Schleicher.
scirpoides, Michx.

FILICES. THE FERN FAMILY.

POLYPODIUM, Linn.

vulgare, Linn. Blue Mounds, I. A. Lapham.
phegopteris, Linn. St. Croix, Dr. Parry.
dryopteris, Linn. Dells of the Wisconsin.

STRUTHIOPTERIS, Willd. Ostrich Fern.

Germanica, Willd.

ALLOSORUS, Bernhardi.

gracilis, Presl. Dells of the Wisconsin.

ASPIDIUM.

fragrens, Sw. Falls of the St. Croix, Dr. Parry.

ADIANTUM, Linn. Maiden Hair.

pedatum, Linn.

PTERIS, Linn. Brake.

aquilina, Linn.
atropurpurea, Linn.

CHEILANTHES, Swartz. Lip Fern.

vestita, Willd. Falls of St. Croix, Dr. Parry.

CAMPTOSORUS, Link. Asplenum, Linn.

rhizophyllus, Link. Walking Leaf.

ASPLENIUM, Linn. Spleenwort.

trichomanes, Linn. Dells of the Wisconsin.
thelypteroides, Michx.
Filix-femina, R. Brown. Aspidium asplenoides.

CYSTOPTERIS, Bernhardi. Bladder Fern.

bulbifera, Bernh.

WOODSIA, R. Brown.

ilvensis, R. Brown. Blue Mounds, I. A. Lapham.

DRYOPTERIS, Adans. Aspidium, Linn. Wood Fern.

thelypteris, Gray.
dilatata, Gray. Falls of the St. Croix, Dr. Parry.
cristata, Gray.
Goldiana, Gray.

ONOCLEA, Linn. Sensitive Fern.

sensibilis, Linn.

OSMUNDA, Linn. Flowering Fern.

spectabilis, Willd.
Claytoniana, Linn. O. interrupta, Mx.
cinnamomea, Linn.

BOTRYCHIUM, Swartz.

lunarioïdes, Sw. B. fumarioides, Willd.
Virginicum, Sw.

LYCOPODIACEÆ. THE CLUB MOSS FAMILY.

LYCOPODIUM, Linn. Club Moss.

lucidulum, Michx.
annotinum, Linn. Lake Superior, Dr. Houghton.
dendroideum, Michx. Lake Superior to Upper Mississippi, Dr. [Houghton.
clavatum, Linn.
complanatum, Linn.

SELAGINELLA, Beauv.

rupestris, Spring. Lyc. rupestre, Linn. Blue Mounds.
apus, Spring. L. apodum, Linn.

CHARACEÆ. THE CHARA FAMILY.

CHARA, Linn.

vulgaris, Willd. Feather-Beds.

MUSCI. MOSSES.

FUNARIA, Schreber.

hygrometrica, Hedwig. Lake Superior, Dr. Parry.

DICRANUM, HEDWIG.

scoparium, Hedwig.

LEUCOBRYUM, Hampe.

vulgare, Hampe. St. Croix, Dr. Parry.

ATRICHUM, Beauv.
angustatum, Beauv. Lake Superior, Dr. Parry.

BARTRAMIA, Hedw.
pomiformis, Hedw. Montreal River, Dr. Parry.

MINUM, ——
affine, Blandon. Lake Superior, Dr. Parry.

BRYUM, Linn.
roseum, Schreber. Lake Superior, Dr. Parry.

HYPNUM, Linn. Feather Moss.
populum, Hedw. Lake Superior, Dr. Parry.
Schreberi, Willd. Lake Superior, Dr. Parry.
tamariscinum, Hedw. Lake Superior, Dr. Parry.

CLIMACIUM, Weber & Mohr. Tree Moss.
dendroides, W. & M. Lake Superior, Dr. Parry.

HEPATICÆ. LIVERWORTS.

RICCIA, Mitchell.
natans, Linn.

MARCHANTIA, Linn.
polymorpha, Linn.

LICHENES.

CLADONIA, Hoffm. Reindeer Moss.
rangiferina, Hoffm. Falls of St. Croix, Dr. Parry.

UMBILICARIA, Hoffm. Tripe de Roche.
Muhlenbergii, Ach. Falls of St. Croix, Dr. Parry.

WOODS OF WISCONSIN.

RACINE, November 25, 1852.

DEAR SIR:—Your letter, inviting me to prepare a paper for the State Agricultural Society, upon the "Woods of Wisconsin," and making suggestions as to the manner in which the subject should be considered, came duly to hand.

In reply, I cannot but say, that were I to consult my other engagements, I should find it impossible to comply with your request; yet in view of the importance of the subject you suggest, and believing also, as I do, that the State has a claim upon every citizen to contribute his part, so far as able, to the fund of information on any subjects immediately important to that class whose prosperity is of vital importance to the welfare of all. In view of these considerations, I will endeavor, in a brief manner, to comply with your request, so far as possible, in the short time given.

It will not be my purpose, in this communication, to give a botanical description, but merely brief notes on the principal qualities and value of the woods, and the fitness of the various trees for the purposes of ornament. I take great pleasure in tendering my thanks, to a much esteemed friend, and accomplished botanist, I. A. Lapham, Esq., of Milwaukee, for his Catalogue of the Flora of Wisconsin,* which embraces a more complete list of our Forest Trees, than can elsewhere be found.

TREES INDIGENOUS TO WISCONSIN.

OAKS.

This family bears transplanting rather poorly, unless quite small. They are readily raised from seed, which should be kept in a cool, dry place, till March or April, when they must be planted, two inches deep, in rich vegetable mould.

White Oak—*Quercus Alba.*

This noble tree is the largest and most important of the American oaks. The excellent properties of the wood render it eminently valuable for a great variety of uses. Wherever strength and durability is required, the White Oak stands in the first rank. It is employed in making wagons, coaches and sleds; staves and hoops of the best quality for barrels and casks, are obtained from this tree; it is extensively used in architecture, ship-building, &c., and vast quantities are used for fencing. The bark is employed in tanning. The domestic consumption of this tree is so great that it is of the first importance to preserve the young trees wherever it is practicable, and to make young plantations where the tree is not found. The White Oak is a graceful ornamental tree, and worthy of particular attention as such—found abundantly in most of the timbered districts.

---

*See ante, page 337.

Burr Oak—*Q. Macrocarpa.*

This is perhaps the most ornamental of our oaks. Nothing can exceed the graceful beauty of these trees, when not crowded or cramped in their growth, but left free to follow the laws of their development. Who has not admired these trees in our extensive Burr Oak openings? Its large leaves are a dark-green above, and a bright silvery-white beneath, which gives the tree a singularly fine appearance when agitated by the wind. The wood is tough, close-grained, and more durable than the White Oak, especially when exposed to frequent changes of moisture and drying; did the tree grow to the same size, it would be preferred for most uses. Abundant, and richly worthy of cultivation both for utility and ornament.

Swamp White Oak—*Q. Bicolor.*

Another valulable and ornamental oak, rather larger than the Burr Oak. The wood is close-grained, durable, splits freely, and is well worthy of cultivation. Not quite so common as the Burr Oak. Valuable for fuel.

Post Oak—*Q. Obtusiloba.*

A scraggy, small tree, found sparingly in this State. The timber is durable, and makes good fuel. Not worthy of cultivation.

Swamp Chestnut Oak—*Q. Prinos.*

This species of Chestnut Oak is a large, graceful tree, wood rather open-grained, yet valuable for most purposes to which the oaks are applied; makes the best fuel of any of this family. A rare tree, found by Mr. Lapham, growing near Janesville. Worthy of cultivation.

Red Oak—*Q. Rubra.*

The Red Oak is a well known, common and rather large tree. The wood is coarse-grained, and the least durable of the oaks, nearly worthless for fuel, and scarcely worthy of cultivation, even for ornament.

Pin Oak—*Q. Palustris.*

One of the most common trees, in many sections of the State. The wood is of little value, even for fuel. The tree is quite ornamental, and should be sparingly cultivated for this purpose.

MAPLES.

A family of beautiful trees, which bear transplanting well; even those of from six to eight inches in diameter, can, without difficulty, be successfully transplanted. Grows in almost any well-drained soil, free from stagnant water. The seed should be planted in the fall, as soon as ripe; they require but a slight covering.

SUGAR MAPLE—*Acer Saccharinum.*

This well-known and noble tree is found growing abundantly in many sections of the State. The wood is close-grained and susceptible of a beautiful polish, which renders it valuable for many kinds of furniture, more especially the varieties known as Bird's-eye and Curled Maples.—The wood lacks the durability of the oak; consequently, is not valuable for purposes where it will be exposed to the weather. For fuel, it ranks next to Hickory. The sugar manufactured from this tree affords no inconsiderable resource for the comfort and even wealth of many sections of the northern States, especially those newly settled, where it would be difficult and expensive to procure their supply from a distance. As an ornamental tree, it stands almost at the head of the catalogue. The foliage is beautiful, compact, and free from the attacks of insects. It puts forth its yellow blossoms early, and in the autumn the leaves change in color, and show the most beautiful tints of red and yellow long before they fall.—Worthy of especial attention for fuel and ornament—well adapted for street planting.

RED MAPLE—*A. Rubrum.*

Another fine maple, of more rapid growth than the foregoing species. With wood rather lighter, but quite as valuable for cabinet-work—for fuel not quite so valuable. The young trees bear transplanting even better than other maples. Though highly ornamental, this tree hardly equals the first named species. It puts forth, in early spring, its scarlet blossoms before a leaf has yet appeared. Well adapted for street planting.

MOUNTAIN MAPLE—*A. Spicatum.*

A small, branching tree, or rather shrub, found growing in clumps.—Not worthy of much attention.

Box Maple—*Negundo Aceroides.*

This tree is frequently called Box Elder. It is of a rapid growth; uite ornamental. The wood is not used in the arts, but is good fuel.—hould be cultivated; grows on Sugar and Rock rivers.

ELMS.

These are tall, fine trees, more remarkable for ornament than for the value of their wood. They grow to the greatest perfection in deep, moist soils, but will flourish to a considerable extent in almost any productive grounds. They endure transplanting admirably. The seed should be sown immediately after ripening, which is in June.

White Elm—*Ulmus Americana.*

This large and graceful tree stands confessedly at the head of the list of ornamental deciduous trees. Its wide-spreading branches and long pendulous branchlets form a beautiful and conspicuous head. It grows rapidly; is free from disease and the destructive attacks of insects; will thrive on most soils; and for planting along streets, in public grounds or lawns, is unsurpassed by any American tree. The wood is but little used in the arts; makes good firewood; should be planted along all the roads and streets, near every dwelling and on all public grounds.

Slippery Elm—*U. Fulva.*

This smaller and less ornamental species is also common. The wood, however, is much more valuable than the White Elm, being durable and splitting readily. It makes excellent rails, and is much used for the frame work of buildings. Valuable for fuel; should be cultivated.

CHERRY.

A valuable class of trees, which flourish best in a deep, moist, sandy soil. They all bear transplanting well. The seed should be planted immediately when ripe, which is the case with all stony seeds.

Wild Black Cherry—*Cerasus Serotina.*

This large and beautiful species of Cherry is one of the most valuable of American trees. The wood is compact, fine-grained, and of a brilliant, reddish color, not liable to warp, or shrink and swell with atmospheric changes; extensively employed by cabinet makers for every species of furniture; is next in value to mahogany. It is exceedingly durable; hence is valuable for fencing, building, &c. Richly deserving of a place in the lawn or timber plantation.

Bird Cherry—*C. Pennsylvanica.*

A small northern species, common in the State, but scarcely worthy of cultivation, unless for ornament.

Choke Cherry—*C. Virginiana.*

This diminutive tree is of little value, not worth the trouble of cultivation.

Wild Plum—*Prunus Americana.*

The common Wild Plum, when in full bloom, is one of the most ornamental of small flowering trees, and as such, should not be neglected. The fruit is rather agreeable, but not to be compared to fine cultivated varieties, which may be engrafted on the wild stock to the very best advantage. It is best to select small trees, and work them on the roots. The grafts should be inserted about the middle of April.

Hack Berry—*Celtis Occidentalis.*

An ornamental tree of medium size; wood hard, close-grained, and elastic; makes the best of hoops, whip-stalks, and thills for carriages. The Indians formerly made great use of the Hackberry wood for their bows. A tree worthy of a limited share of attention.

American Linden, or Bass Wood—*Tilia Americana.*

One of the finest ornamental trees for public grounds, parks, &c., but will not thrive where the roots are exposed to bruises; for this reason, it is not adapted to planting along the streets of populous towns. The wood is light and tough; susceptible of being bent to almost any curve; durable if kept from the weather; takes paint well and is considerably used in the medicinal arts; for fuel, nearly worthless. This tree will flourish in almost any moderately rich, damp soil; bears transplanting well; can be propagated readily from layers. The seed should be sown in autumn.

White Thorn—*Cratœgus Coccinea.*
Dotted Thorn—*C. Punctata.*

These two species of Thorn are found everywhere on the rich bottom lands. When in bloom they are beautiful, and should be cultivated for ornament. The wood is remarkably compact and hard, and were it not for the small size of the tree, would be valuable.

CRAB APPLE—*Pyrus Coronaria.*

This common small tree is attractive when covered with its highly fragrant rose-colored blossoms. Wood hard, fine compact grain, but the tree is too small for the wood to be of much practical value. Well worthy of a place in extensive grounds.

MOUNTAIN ASH—*P. Americana.*

This popular ornament to our yards, is found growing in the northern part of the State, and as far south as 43° lat. The wood is useless.

ASH—*Fraxinus.*

This genus comprises several tall, straight trees, with valuable wood and handsome foliage. It mostly grows in rich, damp soil. It bears transplanting well. The seed may be planted either in the fall or spring.

WHITE ASH—*Fraxinus Acuminata.*

A large, interesting tree, which combines utility with beauty in an eminent degree. The wood possesses strength, suppleness and elasticity, which renders it valuable for a great variety of uses. It is extensively employed in carriage manufacturing; for various agricultural implements; is esteemed superior to any other wood for oars; excellent for fuel. The White Ash grows rapidly, and in open ground forms one of the most lovely trees that is to be found. The foliage is clean and handsome, and in the autumn turns from its bright green to a violet purple hue, which adds materially to the beauty of our autumnal sylvan scenery. It is richly deserving our special care and protection, and will amply repay all labor and expense bestowed on its cultivation.

BLACK ASH—*F. Sambucifolia.*

Another tall, graceful and well known species of Ash. The wood is used for making baskets, hoops, &c.; when thoroughly dry, affords a good article of fuel. Deserves to be cultivated in low, rich, swampy situations, where more useful trees will not thrive.

WALNUT.

The Walnut Family includes the Hickories with the Walnuts proper. The latter bear transplanting well, while the former require great care.

A rich, deep, sandy loam is required to develope the trees in all their luxuriant grandeur. The nuts may either be planted in the autumn or kept in a dry place until spring, when they should be planted three inches deep, in a light vegetable mould.

Black Walnut—*Juglans Nigra.*

This giant of the rich alluvial bottom lands, claims special attention for its valuable timber. It is among the most durable and beautiful of American woods; susceptible of a fine polish; not liable to shrink and swell by heat and moisture. It is extensively employed by the cabinet-makers, for every variety of furniture. Walnut forks are frequently found, which for richness and beauty, rival the far-famed Mahogany. This tree, in favorable situations, grows rapidly; is highly ornamental, and produces annually an abundant crop of nuts.

Butternut—*J. Cinerea.*

This species of Walnut is not as valuable as the above; yet for its beauty, and the durability of its wood, it should claim a small portion of attention. The wood is rather soft for most purposes to which it otherwise might be applied. When grown near streams, or on moist side-hills, it produces regularly an ample crop of excellent nuts. It grows rapidly.

Shell-Bark Hickory—*Carya Alba.*

This, the largest and finest of American Hickories, grows abundantly throughout the State. Hickory wood possesses probably the greatest strength and tenacity of any other of our indigenous trees, and is used for a variety of purposes; but, unfortunately, it is liable to be eaten by worms, and lacks durability. For fuel, the Shell-bark Hickory stands unrivalled. The tree is ornamental, and produces every alternate year an ample crop of the best of nuts. It does not bear transplanting well, and the young trees should be preserved in their original situation wherever practicable.

Pignut Hickory—*C. Glabra.*

This species possesses all the good and bad qualities of the Shell-bark. The nuts, however, are smaller, and not quite so pleasant. It should be preserved and cultivated in common with the Shell-bark.

Red Beech—*Fagus Ferruginea.*

A common tree, with brilliant, shining, light-green leaves, and long flexible branches. It is highly ornamental, and should be cultivated for this purpose, as well as for its useful wood, which is tough, close-grained, and compact. It is much used far plane-stocks, tool handles, &c., and as an article of fuel, nearly equal to maple. The young trees do not bear transplanting well; those only of a few feet high can be removed with success. It is readily grown from seed, which had better be planted in the spring.

Water Beech—*Carpinus Americana.*

A small tree, called Hornbeam by many. The wood is exceedingly hard and compact, but the small size of the tree renders it almost useless.

Iron Wood—*Ostrya Virginica..*

This small tree is found disseminated throughout most of our woodlands. It is, to a considerable degree, ornamental, but of remarkably slow growth. The wood possesses valuable properties, being heavy and strong, as the name would indicate; yet, from its small size, it is of but little use.

POPLAR.

The Poplars are trees of rapid growth. The wood is soft and white, and is not very useful. They thrive on almost any arable soil, and are readily propagated from cuttings.

Balsam Poplar—*Populus Candicans.*

This tree is of medium size, and is known by several names: Wild Balm of Gilead, Cotton Wood, &c. It grows in moist, sandy soil, on river bottoms. It has broad, heart-shaped leaves, which turn a fine yellow after the autumn frosts. It grows more rapidly than any other of our trees; can be transplanted with entire success when eight or nine inches in diameter; and makes a beautiful shade tree—the most ornamental of poplars. The wood is soft, spongy, and nearly useless.

Quaking Aspen—*P. Tremuloides.*

A well-known, small tree. It is rather ornamental, but scarcely worthy of cultivation.

Large Aspen—*P. Grandidentata.*

The largest of our poplars. It frequently grows to the height of sixty or seventy feet, with a diameter of two and one-half feet. The wood is soft, easily split, and used for frames for buildings. It is the most durable of all our poplars, and well worthy of our attention.

Sycamore, or Buttonwood—*Platanus Occidentalis.*

This, the largest and most majestic of our trees, is only found growing on the rich alluvial river bottoms. The tree is readily known, even at a considerable distance, by its whitish smooth branches. The foliage is large and beautiful, and the tree one of the most ornamental known.—The wood speedily decays, and when sawed into lumber warps badly; on these accounts it is but little used, although susceptible of a fine finish.—As an article of fuel it is of inferior merit.

Canoe Birch—*Betula Papyracea.*

A rather elegant and interesting tree. It grows abundantly in nearly every part of the State. The wood is of a fine glossy grain, susceptible of a good finish, but lacks durability and strength, and, therefore, is but little used in the mechanical arts. For fuel, it is justly prized, is to a considerable degree ornamental, and bears transplanting without difficulty. The Indians manufacture their celebrated bark canoes from the bark of this tree.

Kentucky Coffee Tree—*Gymnocladus Canadensis.*

This singularly beautiful tree is only found sparingly, and on rich alluvial lands. I met with it growing near the Peccatonica, in Green County. The wood is fine-grained, and of a rosy hue; is exceedingly durable, and well worthy of cultivation. It is readily grown from the seed, which should be immersed in boiling water for a few minutes, to insure a rapid germinaton.

June Berry—*Amelanchier Canadensis.*

A small tree which adds materially to the beauty of our woods in early spring, at which time it is in full bloom. The wood is of no particular value, and the tree interesting only when covered with its white blossoms.

EVERGREENS.

The Cone-bearing Evergreens—Coniferæ—are peculiarly interesting, as well for the invaluable qualities of their wood, as for their beauty, and the shelter and protection they afford, especially during winter, when all other trees are stripped of their green mantle. The seeds should not be taken out of the cones until they are to be planted, in April or May. A warm, sandy soil, which has a large proportion of decayed leaves, well incorporated into it, is the most suitable for raising seedling Evergreens.

White Pine—*Pinus Strobus.*

The largest and most valuable of our indigenous pines. The wood is soft, free from resin, and works easily. It is extensively employed in the mechanical arts for a great variety of uses. It is found in great profusion in the northern parts of the State. This species is readily known by the leaves being in *fives.* It is highly ornamental, but in common with all pines, will hardly bear transplanting. Only small plants should be moved.

Norway, or Red Pine—*P. Resinosa.*
Yellow Pine—*P. Mitis.*

Two large trees, but little inferior in size to the White Pine. The wood contains more resin, and is consequently more durable. The leaves of both of these species are in *twos.* Vast quantities of lumber are yearly manufactured from these two, together with the White Pine, and yet the extensive pineries of the State are scarcely lessened.

Shrub Pine—*P. Banksiana.*

A small, low tree; only worthy of notice here for the ornamental shade it produces. It is found in the northern sections of the State.

Balsam Fir—*Abies Balsamea.*

This beautiful evergreen is multiplied to a great extent on the shores of Lake Superior, where it grows forty or fifty feet in height. The wood is of but little value. The Balsam of Fir, or Canadian Balsam, is obtained from this tree.

Double Spruce—*A Nigra.*

This grows in the same localities with the Balsam Fir, and assumes the same pyramidal form, but is considerably larger. The wood is light, and possesses considerable strength and elasticity, which renders it one of the best materials for yards and top-masts for shipping. It is extensively cultivated for ornament.

HEMLOCK—*A. Canadensis.*

The Hemlock is the largest of the genus. It is gracefully ornamental, but the wood is of little value. The bark is extensively employed in tanning.

TAMARACK—*Larix Americana.*

This beautiful tree grows abundantly in swampy situations throughout the State. It is not quite an Evergreen, it drops its leaves in winter, but quickly recovers them in early spring. The wood is remarkably durable, and valuable for a variety of uses. The tree grows rapidly, and can be successfully cultivated in peaty situations, where other trees would not thrive.

WHITE CEDAR—*Cupressus, Thyoides.* (?)
ARBORVITÆ—*Thuja Occidentalis.*

These two trees are indiscriminately called White or Flat Cedar. They grow abundantly in many parts of the State, the latter in the northern section. The wood is well known as being exceedingly durable, furnishing better fence posts than any other tree, excepting the Red cedar. Shingles and staves of a superior quality are obtained from these trees. A beautiful evergreen hedge is made from the young plants, which bear transplanting better than most Evergreens. They will grow on most soils, if sufficiently damp.

RED CEDAR—*Juniperus Virginiana.*

This is the well-known tree that furnishes those celebrated fence posts that "last forever." The wood is highly fragrant, of a rich red color, and fine grained; hence it is valuable for a variety of uses. It should be extensively cultivated.

There are many shrubs and vines indigeneous to the State that are worthy of notice for ornamental purposes, but it is not our purpose to speak of them here.

TREES NOT FOUND IN WISCONSIN.

There are many trees that have not yet been found growing in the State, the introduction and culture of which, we would especially recommend. Among these are :

Cucumber Tree—*Magnolia Acuminata.*

One of the largest and most beautiful of American trees. The wood is soft, light, and valuable for many purposes; but principally on account of its ornamental grandeur, we would recommend its introduction and cultivation.

Tulip Tree—*Liriodendron Tulipifera.*

This grand and noble forest tree is found in great profusion in Michigan, Indiana, and most of the adjoining States, where it is called White Wood or Poplar. The wood is of a yellowish color, easily worked, and sufficiently close-grained to admit of a good polish—strong enough for most uses, even where a considerable degree of strength is required. It is used extensively in the mechanical arts for a great variety of purposes, and grows rapidly. It is a beautiful tree, especially when covered with its large, tulip-like blossoms. It flourishes best in a rich alluvial soil.

Chestnut—*Castanea Vesca.*

A well-known, large and valuable tree, of remarkably rapid growth. It flourishes best in light, sandy, or gravelly soils. The wood is one of the most durable, capable of resisting a succession of heat and moisture for a considerable length of time; a valuable quality, which renders it especially suitable for fencing. In favorable situations, this tree produces an abundant crop of delicious nuts.

There are many other trees worthy of introduction, but to the three species mentioned, we would more especially call the attention of arboriculturists. Should either of these be known to grow within the State, we should be glad to be informed of the locality.

Locust—*Robinia Pseu-dacacia.*

One word in relation to the Locust, so much cultivated as an ornamental tree. Its rapid growth and durable wood, is all it has to recommend it. It is the last tree to put forth in the spring, and the first to shed its leaves in the autumn; which wither and fall without displaying any of those dying beauties so charming in many of our indigenous forest trees. The Locust is liable to the attack of the "borer;" an insect which is extensively destroying it in the Eastern States. The branches are so fragile, that the tree is frequently blown literally to pieces by the wind; to obviate which, to a considerable degree, we should "shorten in" all long and slender limbs. We cannot recommend its extensive cultivation, when so many better and more profitable trees can easily be obtained.

RAISING FOREST TREES FROM SEED.

In preparing seed-beds, a well drained, light, rich, sandy loam is best for nearly all trees. Dig deep, at least eighteen inches, and prepare as carefully as you would for a bed of choice vegetables. Plant in rows, three or four inches apart one way, and two feet the other. It is of great advantage to cover the surface of the ground, after planting, with decayed leaves, in imitation of nature. By this mulching, the ground will be kept moist, and thus facilitate the germination of the seed. The seedlings should be transplanted in the nursery, when one or two years old; six or eight inches by three feet is the proper distance in the nursery. It may, perhaps, be as well to plant the seed in the nursery at once, and save the first transplanting.

Planting.—In a timber plantation, the proper distance that trees should be planted from each other, must vary with the species and size of the young tree. The medium distance for trees of four or five years' growth, is four feet each way. It must be remembered, that many more must be planted than can grow to any great size. The object is to plant the trees so close that they will mutually afford protection to each other from the sun and storm. They must be thinned out from time to time, to give room for the most valuable, as they advance in size.

Time for Transplanting.—All deciduous trees—those that shed their leaves in autumn—may be removed any time when the leaves are off. Early spring is generally to be preferred. Evergreens are more successfully transplanted, when the new shoots are just springing, which, in this climate, is about the first of June. Choose a damp, cloudy day, if possible; otherwise cover the roots from the sun with straw, moss, or matting. This precaution is indispensable when moving Evergreens, for if the fine rootlets ever become dry, the tree will surely perish.

Preparations for Planting.—Dig the holes before you procure the trees, in order to avoid unnecessary delays, for the sooner the trees are planted after they are dug up the better. Dig the holes for large trees six feet in diameter, and eighteen inches deep—smaller ones in proportion. Deposit the surface soil by itself, and if the sub-soil be poor, procure enough of good to replace it, so as not to be under the necessity of using this worthless soil dug from the bottom of the pit. Have ready good substantial stakes, sufficiently stout to effectually prevent the trees from motion. Do all this before you start for your trees, and not leave it to be done when your "poor trees, like so many fish out of water, are panting and suffering for a return to their native element."

Selecting and Digging up.—Procure trees of low and rather stalky growth, from open grounds, if possible. Avoid those of tall and slender form growing in deep and shady woods. Be sure the trees are healthy, young and growing. Having selected your tree, dig a trench two or three feet from the body all around it, deep enough to cut off every root; then dig under until it is easily loosened and turned out of its bed. Be careful and preserve every small root within the circle, for upon the preservation of the rootlets principally depends your success. Lay the trees upon a long wagon; protect the trunks and roots from being bruised and barked; cover the roots if the sun shines, or if there is a drying wind at the time.

Trimming and Setting out.—Cut off all the bruised and broken roots; next, cut off not less than one-half the top by shortening some, and cutting other limbs entirely away, as the shape of the tree may require. Set your trees no deeper than they originally grew, unless the soil be light and sandy, when you may set them three or four inches deeper. Having adjusted the roots in their natural position, drive your stakes before the roots are covered, that you may avoid injuring them; then fill up with finely pulverized surface soil, gently pressing it in every cavity. After the roots are lightly covered, pour in one or two pails-full of water; then finish by filling and treading it firmly.

Mulching.—Take half a bundle of straw to each tree; if the tree is of a large size, spread it evenly about the roots, then cover slightly with soil, leaving it a little "dishing;" this will prevent the evaporation of moisture, and keep the soil light and porous, permitting the water to penetrate freely. Old tan-bark or rotted chips will answer quite as well for this purpose as straw. You must not water your trees too often. Once a week, even during a protracted drought, is enough; daily watering is positively injurious. Do not consider the work completed until the trees are secured from motion, by firmly fastening them to the stakes; for be assured, if they are permitted to move about with every wind, they will perish. Transplanting trees in winter, with a ball of frozen earth attached to the roots, is the most successful method of removing large trees.

Concluding Remarks.

It is truly lamentable to see how much time and money is expended in planting trees, which for the want of information as to the *what, how,* and *when,* have already perished, or are in a most unfavorable state of decline, manifest by the sickly foilage, denuded trunks, or already dry and withered stems. And how could it be otherwise, since the trees have been kidnapped—forcibly taken from their damp and shady forest homes—the roots sadly mutilated, and then their long and slender trunks cut in two in the middle, and one end, (but little matter which) rudely thrust into a "post-hole" in the ground, and there subjected to the scorching rays of a midsummer sun; and then, as if to add insult to injury, they are asked to live, grow, and reward the perpetrator of all these outrages against vegetable life, by a luxuriant, healthy shade, and lovely ornament! It has been truly said, that "judicious planting, and the skilful culture of plantations, combine national and private interest in an eminent degree; for, besides the real or intrinsic value of the timber or ostensible crop, with other produce of woods, available for the arts and comforts of life, judicious forest-tree planting improves the general climate of the neighborhood, the staple of the soil as regards the gradual accumulation of vegetable matter; affords shelter to live stock; promotes the growth of pasture and of corn crops; beautifies the landscape, and thus greatly and permanently increases the value of the fee simple of the estate and adjoining lands." There is no country to which these remarks would apply with more truth than to this. How naked and cheerless those dwellings situated on the broad prairies, without a single tree to enliven the scene, and speak of shady comforts; but we hope to see a different picture when the farmers turn their attention more to the comforts and luxuries of Home. Finally, we say, plant trees young and old, and recollect, "What is worth doing at all, is worth doing well."

Yours very faithfully,

P. R. HOY.

To Albert C. Ingham, Esq.,
Sec. of the Wis. State Agr. Society.

LAYING OUT GROUNDS, FLORICULTURE, &c.

MILWAUKEE, December 10, 1852.

DEAR SIR—It is with great pleasure that I comply with the request with which you honored me, to furnish a few ideas on the above subjects, for the use of the State Agricultural Society. Deeming these to be highly subsidiary to the great objects which the Society has in view, I only wish the task had fallen into more competent hands. However, I trust my attempt may at least have the effect of stimulating others, who have the capability to espouse the cause, and treat it more thoroughly and scientifically, on a future occasion.

LAYING OUT GROUNDS.—Under this head may be comprehended all the operations requisite to the production of a finished residence, embracing the site for building, the embellishment of the grounds, and the judicious disposition of the fields, garden, orchard, &c. After the land is selected, the next important point is to choose the most eligible site for building. The mansion and offices demand peculiar attention, as they ought to form the centre of attraction, and present the principal feature of the homestead, for there are assembled all those scenes of usefulness, convenience, or elegance, which form the constituents of a country residence. In selecting the situation, a variety of circumstances, both of a local and general character, must be taken into consideration. Proximity, or otherwise, to the boundary line, or public road, the suitableness of the grounds contiguous for garden scenery, and trees, if any, and their capability of aiding in the general effect, belong to the former; to the latter, the prospect from the house, the view of the house from a distance, shelter, facility for drainage, &c. A pleasant aspect for the principal rooms is always desirable, and in the absence of any local objection, perhaps that of the south, or south-east, would be the best. A south-west aspect is objectionable from the constant dazzling rays of the sun throughout the greater part of the day in summer, and a west aspect from the prevailing icy winds of winter. A north aspect for the front part of the house would at all seasons be too gloomy, although the view from the windows in that direction might be the most pleasant, as all vegetation looks the most luxuriant on the sunny side. A mere square, or oblong house, can, therefore, have only one really good aspect, and it naturally becomes a question as to what style of architecture would best secure a variety of aspects, consistent with the irregularity of offices, and other necessary appendages to a country mansion. The spirit of the Gothic style, more than any other, admits of this irregularity; and hence, the prevalence of that style in modern country residences. Among the advantages of this irregular style, one is, that it readily admits of additions in almost any direction, without compromising the character of the *tout ensemble.* When, however, a rigid adherence to the principles of good taste is aimed at, this style may not be always in keeping with the character of the neighboring grounds or surrounding country. Perhaps the more regular style of the Roman, or the simple style of the Grecian, would be more in place. In this case, the offices and erections for farming purposes might better form a distinct and distant feature in the landscape, or otherwise be concealed by trees, shrubbery, or walls behind the house.

THE LAWN.—Whatever may be the style of the house, it is almost indispensable to a good residence to have a greater or less breadth of lawn extending in different directions from the principal front. This may be comprehended in one, or a series of terraces, or on a level, according to the position of the house and taste of the owner. Thanks to modern taste, and modern gardening, it is no longer considered necessary to have a square, or quadrangular hedged-in, or walled-in depository of plants to be called a garden. The whole lawn, or a portion of it, may be made available for a flower-garden, and will afford scope for a display of taste either of the most simple or the most elaborate—but this part of the subject I shall resume in its proper place.

At this juncture, it is to be presumed that the woodman has spared many trees, either single specimens, or groups, or both—for that reckless demolition of every tree and shrub round many settlements is lamentable to behold, and cannot be too highly reprobated. Well may they be called *clearings;* to-day, the noble denizens of the forest proudly wave their heads in stately grandeur, impressing the beholder with the power and majesty of nature; but to-morrow, alas, reveals another scene! The ruthless age has robbed fair nature of her ornaments, and left instead a wilderness of ghostly stumps, guarded on every side—as if in very mockery of their stability—with bristling lines of zig-zag fences. Here, amidst this desolate array of stumps and rails, a family of young children have to be reared, and what else can be expected but that the minds of the latter will be as destitute of ideality and refinement as the aspect of the former is of comeliness. After a few years have elapsed, an embryo orchard shoots up to relieve the general monotony, distinguished by a number of green lines, so formally and abrubtly defined that it looks like a thing *per se*, having no connection or harmony in itself, or with anything else in nature.

Few States in the Union can compare with Wisconsin in the capability of furnishing materials for creating beautiful landscapes; nor need we go out of it to seek for the choicest models. The world-renowned parks of "Old England" do not afford better opportunities than our own oak openings—with their graceful and flowing outlines, and their gently undulating sweeps, the noble vistas—here contracted, there extended—in this direction, radiant with some gleaming lakelet half concealed; in another, reflecting sombre shadows from some lazy stream; and as a whole, producing such harmony of coloring, so rich a distribution of light and shade as cannot fail to delight, but never cloy, the most artistic eye.—When a dwelling is located amidst the oak openings, the occupant can have no difficulty in laying out his grounds, for the scenery around will be suggestive of the character of all his out-door embellishments, and his aim will be to make them tend to the idea of connectedness and consistency with that. In such situations, to make startling contrasts is attended with no small amount of expense, and a demand of no common-place skill. In this State, nature is so lavish of the materials for verdant decoration that little or no expense need be incurred in furnishing, but rather in thinning out, and only subduing a reasonable portion of the land foı usefulness or convenience, without impairing any of the natural or local beauties. When it is desired to give a park-like appearance to a whole farm, where the land is well timbered, nothing can be more easy. The square, or quadrangular form, may generally be the most convenient for fencing off the various fields, but it is not necessary that they should assume that form. By a little management, the fences at a certain point may be so concealed by clumps of trees left standing as to take away any formality, and obscure the real boundary of a field. The size of the fields, and the distance and distribution of the clumps, will of course depend on the extent of the farm, and the purposes to which it is devoted. The clumps of trees should consist of irregular, detached masses, or occasionally single trees, when they possess individual beauty to recommend them, and can maintain the idea of connectedness. Under this arrangement, a farm would partake of the character of a forest scene subjected to the plow; and if extensive, and really forest-like, resemble those woody districts in Germany where "cultivation smiles in the glades and recesses of eternal forests."

FENCES.—Of all kinds of fences, the common rail or zig-zag fence presents to the eye of strangers the most uncouth appearance, as well as that of a prodigal waste of the "raw material." Perhaps they may be, in many instances, the most economical, as regards cheapness of construction, strength and durability; but where facilities exist for sawing timber, these qualities might be made to combine with a more agreeable form, and a tithe of the amount of material. The improved state of the manufacture of iron, affords new and desirable accommodations in the way of light, cheap and durable fences, desiderata of no small importance in districts where wood is not abundant.

PLANTING.—When a necessity exists for planting young trees, either near or remote from the house, as a general rule, a selection from those found in the neigborhood would be best; as they will not only better harmonize with those around, but grow and thrive with more certainty than others, transferred from a different soil and climate. As to the best kinds for planting on the rich, black soil of our prairies, I have had no opportunity of forming an opinion; but I should expect that most of the soft-wooded, rapid-growing kinds would succeed. As fencing must be a comparatively expensive undertaking on extensive prairie lands, it would be well for settlers thereon to provide themselves at the outset, with seeds of such plants or shrubs as will most rapidly or permanently afford them live fences or hedges. Of these may be mentioned the Osage Orange, Locust, Buckthorn, Hawthorn, Beech, &c. It is affirmed by those who have had experience, that the Osage Orange will form a hedge fence in five years from the time of sowing, capable of resisting all sorts of cattle, and at the same time so compact as to produce a complete barrier, even to rabbits and other small vermin. That this rapid growing tree will survive the winters of this latitude, has been proved beyond a doubt within the State, and in several instances. One fine, thrifty tree may be seen in this city, in the garden of Lewis Potter, Esq., which has stood the test of over ten winters.

THE VEGETABLE GARDEN.—This necessary appendage to a family mansion, should, when circumstances permit, be formed convenient to the rear of the building, out of the view from the principal rooms, and the front approach. A very convenient locality would be such as to have easy access to the domestic offices for culinary purposes, and to the stables and farm buildings for manure.

The Orchard.—The situation of the orchard—all other circumstances being suitable—might be near the garden; and where a gardener or overseer is kept, his house, together with the fruit house, and other receptacles for the winter storage of roots and vegetables, might be very properly placed between them.

The Road, or Approach.—When of any material length, the approach should be formed so as to reveal gradually any natural or artificial beauties the place affords, and each turn should be produced by some gentle variation of the surface, a clump of shrubs or single trees. The first or most distant view of the house, should be as favorable as possible; and the nearest or close view, to comprehend the front entrance or porch, together with the most refined creations of ornament in its vicinity, at a glance.

Walks.—These are often necessary accompaniments to home scenes that cannot otherwise be seen except at certain seasons and conditions of the surface. Walks should always bear some degree of analogy to the scenes they pass through. Their course should be dictated by the range of attractions to be seen, and their turnings by some local or accidental beauty, being careful that there should be a sufficient reason for such arrangement.

The Flower Garden.—There are perhaps few departments of outdoor pastime surrounded by more delightful and refining associations, than the cultivation of a tasteful and elegant flower garden. It is a field equally open and inviting to the humblest cottager and his wealthier neighbor, as well a source of agreeable recreation to the son of toil as to the heir of luxury. The flower garden is a never failing concomitant of a refined civilization; and the entire absence of flowers around a dwelling, bespeaks either abject penury or a rude ignorance of the sweets of life. In the gloomy retreats of forest life, what can be more refreshing and delightful than the companionship of flowers? Though all else around be new, in these we can recognize the sweet companions of our youth; the silent, yet eloquent souvenirs of our early home and fatherland. If parents desire to cultivate in children their powers of forethought and patience, let them give them a flower garden. The impressions received there will be as lasting as life itself; and the maxims employed to make them successful florists, will not be lost on their character and moral bearing in after years. It is rarely that a parent is found fond of his plants and negligent of his child; or gentle towards his flowers, and rough towards his own kind. Hence, we might expect that the cultivation of flowers will favor the amenities of domestic life, and that a wide spread taste and interest in Floriculture, will be a remedy for idleness and other demoralizing habits.

The flower garden, as I suggested before, might be consistently formed on the lawn or terrace, in front of the house. The usual way is to cut out certain figures in the turf, each figure or set of figures, to bear, in size, a just proportion to the extent of the lawn, and the magnitude of the house. In order to be effective, they should be symmetrical and have one general character of outline, whether of straight, curved, or composite lines; nor should their size differ so much as to give the idea of large and small ones mixed together. The figures, or system of figures, however detached, should always be formed to harmonize with some obvious design, and show decidedly their connection with a general centre. Sharp angles or projecting points, should be avoided, as such parts cannot be properly covered with plants, and must always have a bad effect. Neither should the surface of the beds be much raised above the level of the turf, for in such case they look blotchy, and the plants in them too much subjected to the influence of drought for their health and vigor. In planting the beds each may contain flowers only, or flowers and shrubs mixed; but a better effect is produced by each having only one kind of flowers, or one kind of shrubs, so as to form masses, or shades of color to harmonize with those of the other beds. Of all plants or shrubs, capable in themselves of forming an interesting and varied flower garden, the rose, perhaps, stands alone. It is to be found of nearly every shade of color, and by a judicious selection of kinds, a continued succession of bloom may be had from June till December. A very effective method would be, to have each bed filled with roses of one color, containing a mixture of summer and autumn blooming kinds, so that no bed would be without a perpetual display of flowers. A very neat method of keeping roses dwarfish and compact, is, to peg down the branches to the ground: this will, at the same time, expose a greater surface of the plants to the light, and induce an increase of foliage and bloom.

The flower-garden should be well sheltered, either naturally or artificially, in the direction of the prevailing winds, but, if possible, open towards the East, to allow the morning sun gradually to dispel the dew or frost from the tender buds of plants, which are apt to suffer by a too sudden transition from cold to heat when his rays burst upon them all at once from over the tops of the trees—this is more especially the case in spring.

I beieve that I have already entered as far into the details of the subjects treated of as the nature of such a communication will admit, and shall therefore conclude by answering briefly those of your queries not already noticed. "Should there be trees allowed in the garden?" To this I should say yes, if in the flower garden, and provided they form objects of beauty in themselves, and stand detached from the mass. In the vegetable garden, trees are unnecessary, as all culinary vegetables require abundance of light and air, and the presence of trees would only rob them of these, as well as of their legitimate quantum of moisture and nourishment.

"What vegetables and fruits should the garden contain?" These would be best dictated by the taste and wants of the cultivator. Almost any seedsman can tell the relative proportions of a general collection of garden seeds for a given space of ground. The usual fruits admissible in a kitchen garden are gooseberries, raspberries, currants, strawberries, grapes, &c. For the best method of cultivating these, and all sorts of vegetables, I would refer your readers to Buist's "Family Kitchen Gardener."

Yours truly,

THOMAS HISLOP.

To Albert C. Ingham, Esq.,
Sec. of the Wis. State Agr. Society.

AGRICULTURAL EDUCATION.

State University, Madison, December, 1852.

Dear Sir—In your note of November, you allude to an article furnished by me for the first volume of the Transactions of the State Agricultural Society, relative to the organization of an agricultural department in the University; and invite me to occupy a few pages in the second Volume, in the further discussion of the same subject, or of any other pertaining to the interests which your Society proposes to subserve.

Since the natural sciences have been so largely pressed into the service of the farming interests, the importance of professional schools of agriculture, one, at least, in each State, is fast becoming a conviction of the popular mind. It is conceded that the young farmer, who proposes to make himself eminent in his profession, will best approach the practice of it, through an appropriate course of scientific training. But the proper organization of such schools, and its position in the educational economy of the State, are still open questions.

Having stated in the last Volume of the Transactions, the grounds of the opinion, that the object in view would be best attained by bringing the Agricultural school into the University system, and placing it side by side with the schools of Medicine, Law, and Normal Instruction, I have no occasion to extend the argument on that point further.

But whether the Agricultural College be connected with the University or not, the main object to be accomplished by its organization, is the professional culture of the young men of the State, who are destined to agricultural pursuits, and who resolve to work out their position in the social economy, by making themselves eminent in their chosen art.

The functions of the agricultural school are, of course, instructional, in the main—the inculcation of science in its various applications to the production of the material of physical wealth. But such school should not only be the repository of science for instructional uses, but should be prepared to do something for the advancement of science itself, by analysis and experiment. Its permanent endowment and continued presence as a public institution, would furnish the means for a survey of the State with more especial reference to its agricultural capabilities. It should be charged with a gratuitous analysis of soils for the benefit of farmers in any section of the State, and the laboratory should be amply supplied with the means of meeting all practical calls of this character.

The results of such analysis, in order to being of immediate practical utility to the farmer, should be accompanied by suggestion of the crops, to the growing of which the soil, in its natural state, is best adapted; and also of the specific manures which might be necessary to bring it into condition to produce crops to which it was naturally unfitted. Farmers who will thus avail themselves of scientific judgments of the capabilities and the deficiencies of the soil which they have to deal with, will be saved from many an expensive and unsuccessful experiment, as to the crops which they can, most profitably cultivate, the kind of treatment which may be necessary to prevent exhaustion, and the specific manures which should be applied, to supply natural defects in the soil, to keep it in heart, or to restore it if exhausted by ill advised and unthrifty cultivation.

Agriculture is eminently an experimental art, and past experience collected, compared, classified; reasoned out into conclusions and generalized into laws, constitutes the body of agricultural science as we now have it; which the analysis and the tests of the laboratory render of cheap and discriminate application to the uses of the farmer. Without these lights and helps, agriculture may continue to be practised, as heretofore, on traditional maxims; or, if it aim at higher conditions, must accomplish its end by a grosser outlay of means, and at comparatively uncertain returns.

The functions of the Agricultural College, however, should not terminate here. It is fairly to be expected of it that it should undertake the great work of extending the boundaries of knowledge available to the uses of the farmer. It should be the great store-house of statistical information, the watch-tower of varied and discriminating observation. It should be diligent in the collation of facts, and in the development of the lessons of value they are calculated to teach; and should bring, as far as practicable, every principle, thus reasoned out, to the test of rigid and well guarded experiment.

It is here that the important agency of the experimental farm, as part and parcel of the Agricultural College, is brought distinctly to view. It is true, indeed, that every farmer may be an experimenter, and that every departure from routine cultivation is an experiment. But if all farmers were experimenters, our agricultural accounts would, in the agregate, foot up disastrously at the close of the year. Random experiment accomplishes but little, and that little at a large comparative outlay. It is a species of lottery in which some prizes are drawn, but the blanks are legion. Science must guide the hand of experiment if it is to be intelligently and economically done.

Now it may be well asked, by what agency this needful service can be rendered to the Agricultural interest, so efficaciously as by a well endowed and well appointed school of Agricultural Science? Such institution is to be presumed to be in possession of the results of past observation and experience, and enabled to reason successfully from the known to the unknown; thus framing conclusions in advance of the art in its existing conditions, probable, and if true, of value to the practical farmer.

But a conclusion of science in advance of art, is not entitled to universal and confident reception, till subjected to the proper practical test of its truth. The experimental farm enables the Agricultural College to perform this service for the farming interest, under conditions which are a safeguard against those incidental and unobserved causes of error, which are apt to affect ordinary farming experiment.

There are thousands of agricultural problems of great practical interest to the farmer, whose early and undoubted solution may be best expected from the Agricultural College, so endowed and so appointed, that no philosophical conclusion, suggestive of progress and improvement, and involving outlay in its adoption, need go forth to the community until authoritatively tested through the agency of the experimental farm.

The functions of the Agricultural College are, then, threefold. 1. Instructional; 2. Analytic; 3. Experimental.

In its first character, it is charged with the conservation and inculcation of existing agricultural knowledge, to the end that the candidates for eminence in this vocation, may carry into the field of their labors, that professional preparation which the advanced condition of the art now imperatively demands.

In its second office, the Agricultural College is made immediately subsidiary to the operations of the practical farmer, by enabling him, through a special analysis, to apply the science, already acquired, to the circumstances by which he is surrounded, and the physical elements with which he has to deal.

Lastly, by bringing science into immediate contact with practice, and furnishing it, through a suitable endowment, with ample means for prosecuting its researches and experiments intelligently, cautiously, and, therefore, successfully, the Agricultural College is destined to accomplish, in the line of valuable discovery, what could be hardly expected from ordinary farming experiment, without a far greater aggregate outlay of means, and a lapse of time which, in this truly "fast" age, we cannot very well afford.

While every thing is in progression around us, it is not possible that agriculture should remain unaffected. But it is not becoming that this important interest, furnishing the material for all the rest, should lag in the rear of the movement. Acceleration is the object of your Society; and it is much to be doubted whether any single measure will be capable of generating more momentum in the right direction than the organization of a well endowed and well appointed Agricultural College.

With a high appreciation of the important service your Association is rendering to the cause it represents,

I remain,

Your obedient servant,

J. H. LATHROP.

To Albert C. Ingham, Esq.
Sec. of the Wis. State Agr. Society.

CLIMATE OF WISCONSIN.

The connection existing between the Agriculture of any country and its climate is of too intimate a character not to demand the attention of the Agriculturist. The following Tables of Meteorological Observations form a continuation of those presented in the First Volume of the Society's Transactions, and taken in connection therewith, will exhibit, in some degree, the peculiarities of the climate of this State. These Observations the Society is desirous of extending over the whole State, so as to cover every variety of local circumstance, and to continue them for a series of years, sufficiently long to cover every possible change of season.

The Society invites all who are engaged in these pursuits, to contribute the results annually for publication, believing that thus, in a few years, a mass of information will be accumulated from which all that is desirable in regard to our climate may be obtained, and made the basis of a future Essay on this subject.

METEOROLOGICAL OBSERVATIONS

Made at Beloit College, Beloit, Wisconsin, for the Year 1852. Latitude 42° 30′ 23″ N. Longitude 12° 03′ 20″ W. from Washington. Elevation above Lake Michigan, 172 feet; above the Atlantic Ocean, 750 feet. By S. P. Lathrop, M. D., Professor of Chemistry and Natural History.

MONTH.	BAROMETER.			THERMOMETER.			Clearness of Sky.*	Prevailing Winds.	Inch. Rain & Melted Snow.
	MAX.	MIN.	MEAN	MAX.	MIN.	MEAN.			
January	29.66	28.67	29.325	58	−18	21.44	4.32	N. W. & S.W.	3.39
February	29.73	28.24	29.155	48	0	30.26	5.70	N. W. & S.E.	.84
March	29.80	28.40	29.121	72	4	34.00	4.22	N. W. & N.	6.75
April	29.38	28.54	29.501	72	20	43.83	4.95	N. & N. W.	3.99
May	29.56	28.72	29.240	85	35	60.61	6.85	S. E. & S. W.	4.75
June	29.58	28.87	29.258	89	43	68.13	6.73	S.W. & N.W.	2.15
July	29.56	29.07	29.300	92	51	74.16	6.70	N., S., & S.E.	3.49
August	29.52	29.03	29.346	93	52	70.42	7.10	N.E. & S.	1.02
September	29.58	28.40	29.314	88	37	58.58	6.40	N. & S.	2.91
October	29.56	28.90	29.258	76	32	51.25	4.40	N. & S.	4.98
November	29.67	28.66	29.214	50	11	31.83	4.15	S.W., N.&N.W.	2.43
December	29.56	28.47	29.154	55	−4	24.55	3.63	S.W. & S.	3.30
Year	29.597	28.665	29.265	93	−18	47.421	5.51	N.N.W. & S.W.	40.00

* Clearness of Sky is indicated by numbers from 1 to 10; perfectly clear is marked 10.

The mean temperature of the past year is 47°.421, being nearly a medium of the two previous years.

The mean temperature of the Winter months of 1851-52 is 24°.6, being a lower temperature than either of the two former years, 1849-50 and 1850-51, by some 2°. The temperature of the Spring months is 46°.146, being 0°.554 lower than that of the last year, and 2°.966 higher than that of the year previous to the last. The temperature of the Summer months is 70°.57, being 2°.93 higher than that of the summer months of last year, and 0°.93 higher than that for the year 1850. The temperature of the Autumnal months is 47°.22, being 3°.23 lower than that of last year, and 2°.35 lower than that of the year before the last.

The average density of the atmosphere, as indicated by the barometer, is 29,265 inches, being 0,074 inches lower than for last year, and 0,005 inches lower than for the year 1850.

The amount of rain and melted snow for the year is 40 inches, being 15.9 inches less than last year, and 11,24 less than the year 1850. This amount with the exception of the months of February and March, was quite equally distributed through the year.

The amount of snow which fell in the winter of 1851-52, was more than in either of the two previous years, being 30 inches, which was quite equally distributed through the winter, with the exception of February and March—February having 1.5 inches, and March 9 inches.

The crops of the past year were universally *good* crops, though not remarkable for their great yield. Wheat, corn, oats, &c., all did well. With potatoes, there was scarcely any rot; and the quantity of the tubers was probably never better. The yield of grass was rather more than a fair one, though much put back by the want of rain in June. Late crops were slightly effected by the drought in August. Our prairie soil in this region is remarkable for its retention of moisture, and the small extent to which the crops suffer when it is *apparently* very dry. The presence of a stratum of fine, red, arenaceous clay, which so generally underlies the surface soil of this district, seems to act an important part in imparting this valuable property to our soils. No New England soil possesses this to so great an extent.

The *chinch-bug* appeared again in some places, in great abundance, doing, as some think, much damage to the wheat crop. The amount of injury done by this small insect will doubtless be little thought of, in a short time, and like the *cantharis cinerea*, which was thought greatly to injure the potato crop, will prove mostly, if not quite, a harmless insect.

The prevailing winds, as in the two years previous, were north and northwest.

CALENDAR.

January 19th.—Splendid Auroral Arch, from 8½ to 10 o'clock P. M.

February 18th, Aurora at 10 P. M.

March 7th, Wild Geese seen.—8th, Thunder storm.—10th, Meadow Lark heard singing.—11th, Robbins singing.—12th, Star of Bethlehem just up.—13th, Hurricane at 4 P. M.—14th, Hurricane at 9 P. M.—17th, Aurora with streamers.—24th, Tiger Lily up.—30th, Crown Imperial up.

April 2d, Anemone in flower; Wild Gooseberry in leaf.—14th, Wild Pigeons seen; Missouri currant in leaf.—21st, Ground Ivy in flower.—22d, Arched Aurora at 9 P. M.; Blood-root in flower.—29th, Rainbow in the west at $5\frac{1}{2}$ A. M.

May 1st, Dutchman's Breeches and Dwarf Iris in flower.—4th, Hood-leaved Violet in flower.—5th, Solomon's Seal and Jonquil in flower.—6th, Hyacinth in flower.—7th, Missouri currant in flower.—8th, Painted Cup, Wood Sorrel, and English Cherry in flower.—10th, Spring Beauty and Wild Plum in blossom; Burr Oak, Hickory, and Horse Chestnut in leaf; Peach, Pear, Apple, Hound's Tongue, Puccoon, and Cranes-bill in blossom; Baltimore Oriole seen. —16th. Tulip in flower.—17th, Flowering Almond in blossom; Black Oak and White Oak in leaf.—18th, Wild Columbine in flower.—19th, Splendid Aurora from $9\frac{3}{4}$ to 11, P. M.—20th, Mandrake in flower.—22d, Blue-eyed grass in flower.—24th, Tartarian and Fly Honeysuckle in flower.—27th, Wild Indigo and Wild Lupine in flower.—29th, Snow-ball and Five-finger in flower.—31st, Lady's Slipper in flower.

June 2d, Locust, Scarlet Trumpet, Honeysuckle, Spiderwort, and Sweet-scented Syringa in blossom.—6th, Creeping Veitch in flower.—15th, Lobelia Spicata in flower.—19th, Rudbeckias in flower.—22d, Trilliums in flower.—24d. Hair-bells and Golden Alexander in flower.

July 21, Hottest day of the year; Thermometer averaged 82° 5.

November 6th, First snow.

December 17th, Aurora.—21st, Coldest day of the year; Thermometer averaged 4°, 5.

METEOROLOGICAL OBSERVATIONS

Made at MILWAUKEE, WISCONSIN, for the Year 1852. Latitude 43° 03′ 45″ N. Longitude 87° 57′ W. Elevation of the Cistern of the Barometer above Lake Michigan, 15 feet; above the Atlantic Ocean, 593 feet. By I. A. LAPHAM.

	January	Februar.	March.	April.	May.	June.	July.	August.	Septem.	October.	Novem.	Decem.	Year.
BAROMETER (inches)													
At Sun rise	29.36	29.33	29.31	29.24	29.43	29.43	29.49	29.53	29.52	29.45	29.39	29.33	29.40
9 A. M.	29.37	29.34	29.36	29.25	29.45	29.44	29.51	29.56	29.53	29.46	29.41	29.33	29,42
3 P. M.	29.34	29.33	29.30	29.23	29.42	29.42	29.49	29.53	29.49	29.43	29.38	29.31	29.39
9 P. M.	29.38	29.36	29.30	29.25	29.44	29.43	29.49	29.53	29.51	29.45	29.40	29.34	29.41
Maximum	29.80	29.97	30.20	29.59	29.81	29.75	29.71	29.73	29.78	29.72	29.84	29.78	30.20
Minimum	28.79	28.34	28.51	28.73	28.90	29.03	29.17	29.22	29.07	29.06	28.83	28.61	28.34
Mean	29.36	29.34	29.32	29.24	29.44	29.43	29.49	29.54	29.51	29.45	29.39	29.33	29.40
TEMP. OF BAROMET.													
At Sun rise	30.81	39.00	41.00	44.80	57.32	57.32	69.32	68.16	60.80	56.93	42.23	37.87	50.46
9 A. M.	31.10	39.00	41.13	44.30	57.26	57.26	70.32	68.29	60.53	56.10	42.23	37.51	50.42
3 P. M.	35.23	43.38	44.19	47.73	60.71	60.71	73.77	72.00	64.00	58.78	44.33	40.82	53.80
9 P. M.	36.77	44.31	46.19	45.60	60.87	60.87	72.77	70.35	63.70	58.87	45.37	41.93	53.88
Mean	33.48	41.42	43.13	45.61	59.04	59.04	71.54	69.70	62.26	57.67	43.54	39.53	52.16
TEMPERAT. OF AIR.													
At Sun rise	17.71	23.90	27.81	33.67	47.71	58.53	62.87	60.52	51.57	48.71	31.10	23.93	40.67
9 A. M.	19.51	27.31	31.55	39.77	57.74	68.50	73.74	71.68	61.47	53.07	33.03	25.39	46.90
3 P. M.	25.13	33.17	36.10	42.10	60.80	72.07	76.00	73.90	64.90	58.94	36.67	30.13	50.83
9 P. M.	20.55	27.78	32.45	37.13	52.32	63.63	68.68	66.45	57.37	51.77	32.90	26.64	44.64
Maximum	48	54	57	52	84	89	.91	.85	.85	.75	.48	.48	.91
Minimum	−19	3	1	21	30	45	.46	.51	.36	.32	.16	.1	−19
Mean	20.72	28.03	31.98	38.17	54.65	65.66	70.32	68.13	58.82	53.12	33.42	26.52	45.80
CLEARNESS OF SKY.*													
At Sun rise	323	397	471	533	707	630	665	648	637	409	430	329	515
9 A. M.	358	431	429	487	684	727	667	600	653	523	387	429	531
3 P. M.	368	548	307	343	648	570	660	710	653	584	290	274	495
9 P. M.	507	669	316	483	764	673	765	790	677	497	353	319	568
Mean	389	511	381	461	701	650	692	687	655	503	365	338	528
WIND, (No. of Obs.)													
From the North	1	3	1	5	1	3	4	2	3	4	3	1	31
" South	5	2	0	0	2	2	5	7	4	8	4	6	45
" East	5	4	6	7	10	12	1	5	5	6	7	0	68
" West	33	34	10	12	6	20	11	13	19	29	28	40	255
" N. E.	11	3	27	47	29	14	29	28	17	15	11	4	235
" S. E.	4	8	25	16	17	13	24	36	27	6	12	20	208
" N. W.	46	33	35	18	24	17	19	10	26	27	45	28	328
" S. W.	18	28	20	13	29	35	29	17	16	28	10	24	267
Calm	1	1	0	2	6	4	2	6	3	1	0	1	27
RAIN & MELTED SNOW Inches	1.13	1.00	4.56	2.64	1.95	2.46	3.27	0.58	2.30	4.87	2.72	1.85	29.33

* Entire clearness, being 1,000.

METEOROLOGICAL OBSERVATIONS

Made at AZTALAN, WISCONSIN, for the Year 1852. Latitude 43° 04′ N. Longitude 88° 30′ W. Elevation above Lake Michigan, about 230 feet. By JAMES C. BRAYTON.

		January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November.	December.	Year.
THERMOMETER.	Sun rise...	14.90	22.35	26.87	31.77	47.52	53.43	68.03	57.39	47.53	44.45	25.23	17.71	38.09
	9 A. M.....	20.23	28.55	32.48	39.35	58.00	68.69	73.97	67.97	61.17	53.55	30.33	24.07	46.55
	3 P. M.....	25.29	33.34	33.03	49.33	70.10	78.50	84.00	80.19	69.30	61.00	34.83	29.55	54.04
	9 P. M.....	19.52	26.66	31.20	35.00	54.80	67.90	67.23	65.81	53.17	52.71	29.43	23.65	43.93
	Mean.......	19.98	27.72	32.14	38.86	57.60	67.13	72.06	68.34	57.79	52.85	29.95	24.24	45.72
	Maximum..	50	54	62	58	84	92	92	91	88	78	47	53	92
	Minimum..	-21	2	-12	20	28	40	43	44	30	32	6	-3	-21
Clearness of Sky. In decimals.	Sun rise...	374	465	345	437	736	716	545	736	757	607	457	374	546
	9 A.M.....	387	486	345	487	733	723	568	736	710	616	420	419	552
	3 P.M.....	468	541	338	443	739	670	693	746	747	619	403	440	571
	9 P.M.....	548	645	298	477	790	733	735	836	880	568	433	433	615
	Mean......	444	534	331	461	749	711	635	764	773	602	428	414	571
Days entirely clear		0	4	0	2	8	4	0	6	10	7	1	2	44
Entirely cloudy...		5	4	7	5	0	1	0	0	1	6	3	5	37
Direction of Wind. No. of Observations.	From the N.	7	3	3	5	1	4	2	3	5	4	0	3	40
	E.	0	1	2	2	3	0	0	0	0	1	0	2	11
	" S.	0	3	3	0	11	9	5	8	3	4	6	1	53
	" W.	3	2	2	0	0	3	4	3	3	0	5	1	26
	" N. E.	4	2	4	6	1	0	4	3	4	5	0	3	36
	" S. E.	2	4	6	9	11	5	7	3	1	1	3	5	57
	" S. W.	10	4	7	3	5	4	9	8	6	10	1	11	78
	" N. W.	8	7	2	6	1	12	4	7	15	10	18	9	99
	Calm......	3	4	3	12	20	22	3	20	14	17	13	8	139
Rain and Melted Snow (inches)		1.69	0.90	3.90	2.07	1.34	3.70	4.75	1.50	2.02	3.75	3.80	1.75	31.17

METEOROLOGICAL OBSERVATIONS

Made at Baraboo, Wisconsin, for the Year 1852. Latitude 43° 29′ N. Longitude 89° 14′ W. By B. F. Mills.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Thermometer.	Sun rise	14.17	19.94	23.66	32.89	52.98	62.04	63.85	59.41	50.45	44.21	23.61	19.11	38.86
	9 A. M.	19.41	27.08	31.61	41.76	63.18	73.29	77.25	74.86	60.90	52.45	30.31	23.01	48.75
	3 P. M.	23.91	33.61	37.04	48 40	69.95	78.42	83.13	78.97	67.83	60.29	32.62	26.69	53.40
	9 P. M.	16.84	23.84	28.93	37.13	54.62	60.68	66.66	61.00	52.32	47.99	25.44	21.11	41.38
	Mean	18.46	26.03	30.09	40.04	60.15	68.58	72.75	68.08	57.56	51.12	28.00	22.54	45.28
	Maximum	52	51	65	63	89	93	95	88	85	77	44	49	95
	Minimum	–23	–6	–7	18	30	45	50	42	30	26	-2	–9	–23
Clearness of Sky. In decimals.	Sun rise	261	472	396	300	558	706	500	540	543	241	256	219	416
	9 A. M.	267	434	401	306	525	630	530	583	551	409	193	209	419
	3 P. M.	377	354	206	316	519	566	519	600	496	500	226	193	406
	9 P. M.	429	520	251	493	648	666	583	696	640	412	411	145	491
	Mean	333	445	314	354	562	642	533	605	570	393	271	191	434
Days entirely clear		1	0	0	1	1	1	1	0	1	0	0	0	6
Entirely cloudy		8	6	9	6	2	0	0	0	1	6	10	10	58
Direction of Wind. No. of Observations.	From the N.	2	0	4	0	0	0	1	0	0	8	6	0	21
	" S.	0	5	1	1	8	14	7	3	3	4	3	1	50
	" E.	3	2	14	18	7	0	1	2	0	3	8	10	68
	" W.	34	38	33	35	24	11	9	11	12	20	26	41	294
	" N. E.	8	3	5	2	0	0	4	5	4	15	4	4	54
	" S. E	11	0	22	19	23	7	4	17	15	19	3	7	147
	" N.W.	37	21	9	2	3	12	4	12	16	8	3	1	128
	" S. W.	16	18	14	8	9	28	45	24	30	19	17	18	246
	Calm	13	29	22	35	50	48	49	50	40	28	50	42	456
Rain and Melted Snow (inches)			1.420	4.183	3.465	1.630	3.665	3.980	2.445	1.700	4.857	2.407	1.510	31.26

METEOROLOGICAL OBSERVATIONS

Made at KENOSHA, WISCONSIN, for the Year 1852. Lat. 42° 35′ N. Long. 87° 50′ W. Elevation above Lake Michigan, 35 feet. By JOHN GRIDLEY.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
THERMOMETER.	Sun rise...	22.09	24.62	29.13	34.60	48.32	56.30	64.00	57.61	52.83	49.90	28.96	23.51	40.16
	9 A.M.....	25.63	30.00	33.63	40.93	53.61	63.87	73.55	68.03	62.43	50.83	34.47	26.39	46.91
	3 P.M.....	31.26	35.41	40.20	42.36	57.74	65.87	72 36	71.64	63.40	51.71	35.66	30.35	49.83
	9 P.M.....	26.04	29.00	34.60	36.43	50.93	61.10	68.70	63.70	54.00	48.84	32.60	26.39	45.11
	Mean......	26.25	29.76	34.39	38.58	52.45	61.78	69.45	65.24	58.14	50.32	32.92	26.66	45.16
	Maximum.	45	57	57	51	86	85	89	81	80	79	47	49	89
	Minimum..	−18	5	5	19	33	40	49	50	37	35	17	7	−18
Clearness of Sky. In decimals.	Sun rise...	393	345	490	683	658	723	790	674	740	468	384	342	557
	9 A.M.....	409	540	567	496	713	803	832	703	663	471	348	416	580
	3 P.M.....	429	617	416	473	648	626	751	780	643	507	220	374	540
	9 P.M.....	532	707	361	550	670	616	739	703	643	461	448	445	573
	Mean......	441	552	458	550	672	692	778	715	675	475	350	394	562
Days entirely clear		4	6	2	7	7	9	8	7	8	4	2	3	67
Entirely cloudy...		5	3	3	2	0	0	0	1	2	6	8	4	34
Direction of Wind. No. of Observations.	From the N.	5	1	3	2	4	6	0	2	5	8	2	3	41
	" S.	6	6	6	2	12	6	9	2	7	10	0	5	71
	" E.	1	10	24	16	13	9	10	24	22	11	10	3	153
	" W.	31	36	32	27	15	33	27	7	24	20	21	21	294
	" N. E.	11	2	10	34	29	9	28	25	8	16	1	2	175
	" S. E.	0	0	6	2	6	4	1	1	6	0	9	8	43
	" N.W.	9	20	10	1	5	5	3	2	6	10	22	28	121
	" S.W.	17	7	6	3	6	7	8	4	2	7	7	10	84
	Calm	33	26	23	25	30	25	30	52	32	26	34	32	368

METEOROLOGICAL OBSERVATIONS

Made at EMERALD GROVE, ROCK COUNTY, WISCONSIN, for the Year 1852. Latitude 42° 31′ N. Longitude 88° 54′ W. Elevation above Lake Michigan, 408 feet; above the Atlantic Ocean, 986 feet. By ORRIN DENSMORE.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
THERMOMETER.	Sun rise...	14.63	22.31	26.16	32.30	47.48	56.06	63.32	58.71	50.63	46.03	25.90	19.64	38.59
	9 A. M.....	17.42	26.65	32.22	40.36	59.64	69.90	75.22	71.45	59.53	52.32	29.87	22.35	46.41
	3 P. M.....	24.22	32.14	38.84	46.23	68.80	76.83	80.87	78.58	65.63	58.68	33.36	28.13	52.69
	9 P. M.....	16.58	24.58	30.48	37.36	52.00	61.13	66.16	63.90	55.20	48.51	27.70	20.87	42.04
	Maximum..	47	49	73	60	84	91	92	91	83	73	47	52	92
	Minimum..	-24	-7	0	16	31	40	51	49	37	31	8	-2	-24
	Mean......	18.21	26.42	31.84	39.06	56.49	65.97	71.39	68.14	57.75	51.38	29.20	22.91	44.89
Clearness of Sky. In decimals.	Sun rise...	261	399	371	333	671	610	603	555	590	377	233	232	411
	9 A. M.....	264	520	383	346	532	533	464	516	573	403	223	255	418
	3 P. M.....	322	520	287	270	561	523	506	574	513	503	223	227	419
	9 P. M.....	545	545	293	413	564	646	684	745	623	471	350	251	510
	Mean......	347	495	333	340	582	570	564	597	575	439	257	233	442
Days entirely clear		1	0	0	0	1	0	0	0	1	2	1	0	6
Entirely cloudy...		1	5	7	6	1	0	0	1	1	7	8	11	48
Direction of Wind. No. of Observations.	From the N.	17	4	9	16	7	4	3	19	9	9	10	13	120
	" S.	11	3	18	2	24	13	25	23	25	30	2	11	187
	" E.	4	10	20	29	20	4	7	21	9	9	10	12	155
	" W.	16	23	15	14	11	19	9	9	19	21	25	28	209
	" N. E.	6	1	13	9	8	6	9	11	12	14	16	5	110
	" S. E.	8	2	6	8	11	3	15	9	10	8	14	21	115
	" N.W.	31	36	29	22	15	25	12	1	14	15	21	10	231
	" S. W.	28	32	13	8	23	29	26	9	10	13	16	23	230
	Calm....	3	5	1	12	5	17	18	22	12	5	6	1	107

METEOROLOGICAL OBSERVATIONS

Made at PLATTEVILLE, WISCONSIN, for the Year 1852. Latitude, 42° 45′ N. Longitude 90° W. Elevation above the Mississippi, about 200 feet. By J. L. PICKARD.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December	Year.
THERMOMETER.	Sun rise....	14.61	21.34	26.68	35.07	53.58	58.93	59.10	62.26	51.97	46.61	24.50	17.74	39.36
	9 A. M......	19.01	27.49	34.74	43.03	62.45	70.09	71.15	73.45	61.43	54.58	28.97	20.35	47.22
	3 P. M......	23.13	34.97	41.19	51.57	72.74	79.23	78.14	83.87	71.80	61.52	34.13	23.97	54.68
	9 P. M......	16.58	25.72	32.45	38.80	58.36	64.53	66.18	69.58	58.90	51.22	27.60	19.42	44.11
	Mean.......	18.35	27.38	33.76	42.12	61.78	68.39	68.64	72.29	61.03	53.48	28.80	20.37	46.36
	Maximum..	54	54	80	74	87	96	95	96	93	85	46	46	96
	Minimum..	−28	−6	−4	16	30	42	43	47	34	34	2	12	−28
Clearness of Sky. In decimals.	Sun rise....	300	500	450	300	500	650	600	600	600	400	200	300	450
	9 A. M......	400	550	275	300	600	600	600	600	600	500	200	300	450
	3 P. M......	400	500	350	400	600	550	500	700	500	500	300	300	475
	9 P. M......	400	575	300	500	700	700	700	600	600	400	400	300	525
	Mean.......	375	531	345	375	600	625	600	625	575	450	275	300	473
Prevailing Winds.		N.W.	W.	N.W.	N.W.	S. E.	S. W.	S. W.	E.	W.	S. E	N.W.	N. E.	N.W.
Rain and Melted Snow (inches)		1.08	0.20	5.00	2,57	3.56	2.90	3.00	1.50	2.00	5.63	2.63	1.00	32.07
No. of days Rain fell..........		6	3	17	16	11	8	6	7	8	12	14	16	124

Whole amount of Snow, 45 inches.

The more remarkable phenomena of the year are—Very brilliant Aurora, Feb. 17, 18 and 19th; Snow accompanied by vivid Lightning and heavy Thunder, April 10th; Rain night of June 1st and 3d, 3.65 inches; First Snow, November 10th.

A peculiar rustling noise was observed on the evening of the 27th of October, as of a large flock of birds passing rapidly from N. W. to S. E. I am confident it could not have been produced by birds, as it was time of full moon, perfectly clear, and no birds were to be seen though the noise produced was immediately over our heads.

METEOROLOGICAL OBSERVATIONS

Made at SUMMIT, WAUKESHA COUNTY, WISCONSIN, for the Year 1852. Latitude 43° 05′ N. Longitude 88° 30′ W. Elevation above Lake Michigan, about 300 feet. By EDWARD W. SPENCER.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Temperature of the Air.	Sun rise....	14.68	20.97	24.97	31.60	47.16	54.30	59.84	57.39	49.13	45.58	26.10	20.00	37.64
	9 A. M.....	17.39	24.67	29.55	39.23	59.51	67.40	71.93	69.70	59.70	51.68	29.73	22.97	45.29
	3 P. M.....	24.03	32.17	36.94	46.20	66.81	72.47	78.10	76.42	66.27	59.32	33.63	27.35	51.64
	9 P. M.....	19.71	26.13	31.87	38.30	54.55	64.73	69.93	67.84	58.50	52.29	28.07	23.65	44.63
	Mean	18.94	25.99	30.84	38.83	57.00	64.72	69.96	67.84	58.40	52.47	29.84	23.50	44.86
	Maximum..	42	52	62	65	82	88	88	88	85	76	43	51	88
	Minimum..	−22	0	−14	20	28	36	40	46	30	28	9	−2	−22
Direction of Wind. No. of Observations.	From the N.	0	1	1	0	0	1	1	1	0	0	1	0	6
	" S.	4	3	3	0	1	3	1	5	1	2	1	4	28
	" E.	1	0	2	4	5	2	0	2	4	1	2	4	27
	" W.	5	8	3	2	4	3	2	0	4	7	6	9	53
	" N. E.	3	3	4	8	4	2	7	11	3	4	3	0	52
	" S. E.	2	3	6	2	4	1	2	4	6	0	5	4	39
	" N.W.	13	7	8	10	7	8	7	3	7	6	8	5	89
	" S.W.	3	4	4	4	6	10	9	5	5	9	4	5	68
Weather. Days.	Cloudy....	19	13	13	14	3	3	3	11	8	8	22	18	135
	Fair.......	10	13	9	10	23	24	21	17	16	16	2	5	166
	Rainy.....	0	0	7	6	5	3	7	3	6	7	4	1	49
	Snowy....	2	3	2	0	0	0	0	0	0	0	2	6	15

Total depth of Snow, 35 inches.