JOURNAL

OF THE

United States Agricultural Society.
PROCEEDINGS
OF THE
United States Agricultural Society.

The first annual meeting of the United States Agricultural Society was convened on Wednesday, 2d February, 1853, at 10 A.M., in the Lecture-Room at the Smithsonian Institution.

The meeting was called to order by the President, Hon. Marshall P. Wilder, of Massachusetts. In the absence of the Recording Secretary, (Robert C. Walker, of Pennsylvania,) William S. King, of Rhode Island, was elected Secretary pro tem.

The States and Territories of the Union being called, the members severally gave in their names.

Professor Mapes, of New Jersey, handed to the Chair a portion of the vine or stalk of the Japan pea, which was raised last season in Suffolk county, New Jersey. The seed was originally obtained from some of the company of a Japanese vessel wrecked on the coast of California, and formed a portion of their food. He described it as a plant whose botanical character had not been yet precisely settled, but which was probably well deserving the attention of agriculturists. The specimen offered was cut off at about two feet from the ground, and was thickly studded around with seed-pods, thus producing very many times the crop of the ordinary pea of our gardens. In planting, these peas are set at about five feet apart, and in the course of their growth cover the whole surface of the intervening ground. They require no sticking, nor other support, the stem being quite stiff and unyielding. This pea appears to be specially useful for feeding to horses; but may, no doubt, be also made to contribute largely to human sustenance. Besides the Japan pea, Professor Mapes also produced specimens of the California soap-plant, the pal-
millo. It is probable, however, that this class of plants is not suited to our comparatively humid climate. Nature seems to have given the soap-plant to those regions where rain is deficient, and where animals do not deposit a sufficiency of fat to furnish tallow. It may, therefore, be expected, for a double reason, that the soap-plant would not thrive much in our Atlantic region. In New Mexico, &c., it is one of the most common of plants.

The President then delivered his Annual Address.

ADDRESS.

Gentlemen of the United States Agricultural Society:

The Constitution of this Association provides that its annual meeting shall be held on the first Wednesday of February. We have assembled in conformity with that provision, although but a few months have elapsed since our organization. Our officers are now to be elected for the first calendar year, and such other business transacted as may be deemed, at present, necessary for its general welfare.

Before entering upon these duties, it may reasonably be expected that your presiding officer should submit such subjects for your consideration as our brief history suggests.

BOARD OF AGRICULTURE.

In behalf of the Executive Committee, whose duty it was to appoint, in certain cases, State and Territorial Boards of Agriculture, I would state that the Committee held a meeting in Philadelphia last September, but they concluded to defer such appointment at least till the present session, when it was supposed additional information would be obtained, and increased facilities presented for the better fulfilment of this trust.

Some States have already appointed their quota of the National Board, from which we expect an account at this time, and a similar measure is in progress in other States, from which reports may be received during the ensuing year; and it is hoped that the full organization of the Board will soon be completed in all our States and Territories, either by their own action or by the appointments of your Executive Committee.
The first number of the Society's Journal, consisting of 144 octavo pages, was prepared and published by the energy of our Corresponding Secretary within about two months after our organization, and has been distributed to the original and most of the new members. It was printed from stereotype plates, from which additional copies can be obtained to supply future demand. Events attending its publication caused some typographical errors, which will be corrected in subsequent impressions. It should also be stated that the list of members was found, in several instances, not to contain their post-office address, which will account for the non-reception of it by those members; and this suggests the importance of obtaining from them, and from all future members, their full names, titles, and post-office address, written in a plain and legible style.

Circumstances beyond the control of the Executive Committee have delayed the publication of the second number of the Journal, which we trust will be shortly issued.

CORRESPONDENCE.

A correspondence has been opened with distinguished Agriculturists and many local Associations relative to the progress and condition of Agriculture in the United States, and to the existence and objects of this Society. This should be continued and extended to all parts of our own country and continent, and to transatlantic nations; and I respectfully submit whether a conference of a Committee of this body with the General Government is not desirable in regard to the facilities for conducting this correspondence through its functionaries in other lands, and for the transfer, through them, of additional Agricultural information, seeds, and specimen products, and for the proper dissemination thereof, by this Association, to the farmers and gardeners of America.

AUXILIARIES.

The action of your Committee has increased their conviction of the necessity of a closer alliance between the United States Agricultural Society and kindred Associations in the various States, Territories, and Districts of the Union; and it is therefore earnestly recommended that measures be immediately
adopted to secure such association and co-operation with them, and to obtain annual reports of their transactions during the present, past, and succeeding years, which shall be carefully preserved, and from which compilations from year to year may be made, and also to secure, ultimately, at the seat of Government, a full history of the state and progress of American Agriculture.

Your attention is also respectfully solicited to the expediency of such an alliance of this Society with the American Pomological Society, as kindred objects and interests may seem to require.

LOCATION AND OFFICES.

Our location at the national capital gives us peculiar facilities for intercommunication and for intercourse with members of Congress representing all parts of our widely-extended country. We may also secure many benefits from the Smithsonian Institution, whose objects are the general increase of knowledge and the promotion of science, objects so analogous to those of this Association as to give importance to the question whether reciprocal benefits might not be expected from closer relations. By the courtesy of this Institution, we have been permitted to occupy their commodious apartments, and an inquiry should be made by our Executive officers or a Special Committee, to ascertain what room or rooms can be obtained for the future accommodation of this Society. We need a public building or offices in some existing edifice for our Corresponding Secretary and Treasurer, for the preservation of our records and of the Agricultural seeds and products which are now in our possession, or may be hereafter acquired, and also for an Agricultural library, museum, and cabinet.

SECRETARYSHIP.

The progress of this Society, the fulfilment of its designs, and the rank it should take as a National Association, require a permanent Secretary, who shall be located in this city, and devote his time and talents to its advancement. Its correspondence must necessarily be extensive; and the preparation, publication, and distribution of its Transactions and Quarterly Journal will demand much labor, and these duties will become more onerous with the progress of the Society.
The Treasurer's Report will be presented in the progress of business, from which you will learn the state of our finances. The efficiency and success of this body require pecuniary means adequate for the permanent support of a Secretary, and a suitable compensation for the duties which may devolve upon the Treasurer; also for the regular issue of its Journal and Transactions, for postage, and other necessary and contingent expenses. I respectfully submit whether a portion of these means may not be obtained from Government, either as a grant in furtherance of our objects, on the same general principle as many of the State Governments bestow their patronage upon the Agricultural Societies within their territorial limits, or, if Government would so direct, as a consideration for the performance by this Society of the duties of the Agricultural Department of the Patent-Office.

The sum now expended by Government in that branch of the Department, if placed at the disposal of this Society, would enable us to collect, through our auxiliaries and corresponding bodies, the most reliable statistics and the most recent and valuable information, and would also enable us to publish the same and to distribute it, through the members of Congress, through those of this Society, and of the hundreds of kindred local Associations acting in concert with us throughout the country.

It is also worthy of inquiry what further measures can be adopted to increase the income of the Society by donations or memberships, and by the sale of its publications. For the furtherance of these objects, the Executive Committee have, in a few instances, appointed local agents, whose success encourages the belief that it is expedient to multiply these functionaries with a view to canvass all the States and Territories of the Union.

One of these agents in the smallest State (Rhode Island) has, in the course of six weeks, procured more than one hundred members, collected valuable information, and awakened additional interest in this worthy cause, and is still successfully prosecuting his labors. Had a similar agency been employed in other parts of the country, with the same success, we should have enrolled at this time eight thousand members, with an annual income of sixteen thousand dollars; a result eminently
desirable, and which, we believe, can be accomplished by an efficient agency. Local agents may be appointed by the Executive Committee, or with their concurrence, by the officers of this Society, in each of their respective States, and supported by a reasonable percentage on their collections.

Much may also be done to secure funds requisite for extensive and successful operation by donations from the wealthy and benevolent. A gentleman of fortune, Hon. Samuel Appleton, of Boston, whose name is honorably associated with various philanthropic and charitable enterprises of our age and nation, has the honor of commencing worthy action in our behalf by a donation of one thousand dollars. Several other distinguished gentlemen have subscribed liberally to our funds, in the form either of donations or of Life-memberships, a detailed statement of which will hereafter be submitted and published in the Society’s Transactions. Is it too much to believe that persons may be found in our commercial cities and widely extended country who will imitate these excellent examples, and thus place at our disposal a fund, the annual income of which will be sufficient to render the influence of this Society permanent and most salutary? I commend this whole subject to your favorable consideration.

EXHIBITIONS OF THE SOCIETY.

In addition to the measures already enumerated for the accomplishment of our objects, I would submit to you a suggestion with reference to holding an Annual Exhibition of this Society in connection with the World’s Fair, which is to commence next May, and to continue through the ensuing Summer and Autumn, in the Crystal Palace, in the city of New York.

The idea of such a Fair, in many minds, appears to have originated from the very incomplete and imperfect representation of American arts and industry in the World’s Fair at London, in 1851, and consequently from the inadequate impression of the same thereby left in some portions of the mother country and of Europe. If this American Fair succeeds, as it is anticipated, it is desirable there should be in it a full and fair representation of American Agriculture, Horticulture, Pomology, and kindred arts. The Hon. Secretary of State has already presented the subject to various agents of our Government in foreign lands, and instructed them to co-operate in the design. An exhi-
bition of this Society, as an independent body, or in connection with some of the State Agricultural Societies, at that time and place, would give the Association a world-wide notoriety, and secure for it other advantages, besides contributing largely to the completeness and interest of the Fair.

If this suggestion is received with favor, it will be important that the Executive, or a Special Committee, be invested with full power to confer and negotiate with the Committee of that Association already appointed on this subject, and to execute the design in a manner conducive to the mutual interests of both, and honorable alike to American Agriculture and to the Republic.

LECTURES.

Several distinguished gentlemen have been invited to attend this meeting, from whom it is hoped we may receive either addresses or lectures on Agricultural topics; and as our annual meeting will occur during the session of Congress, I would recommend that provision be made, hereafter, for an annual course of lectures during our anniversary, and that the same be published, either in the Transactions of the Society, or in a separate volume.

AMENDMENTS OF THE CONSTITUTION.

Our Constitution was necessarily prepared in haste, during the Convention which gave birth to the Society, and in some particulars is susceptible of improvement and of important additions. Section III. may be improved by more definite phraseology, precisely adapted to our organization. Another embarrassment would be removed if our "Board of Agriculture" were denominated "The General Board of Agriculture," to distinguish it from the members thereof in a given State, who constitute a "Local Board," and should be so designated.

The Constitution also provides (Sec. II.) for the election of honorary members, but does not prescribe the manner in which they shall be proposed. It is worthy of consideration whether this instrument should not require their nomination by the Executive Committee before their election by the Society, and whether this alteration should not be made at the present session, so as to secure the immediate appointment, as honorary and corresponding members, of gentlemen who have distin-
guished themselves in the Arts, by donations to this Society, or by important public services. Measures should also be immediately adopted for procuring a suitable Diploma of this Society, and a copy thereof, duly executed, for each of its Annual, Life, Honorary, and Corresponding Members.

CONCLUSION.

Gentlemen: Having submitted these suggestions for your consideration, permit me to add that a great work has been given us to accomplish, but we have much to encourage us to its prompt and faithful performance.

The vastness of our Agricultural resources—the extent of our territory, surpassingly rich in gold, silver, iron, copper, coal, and other metallic and mineral treasures—the variety of our soil and climate, capable of producing nearly all the Agricultural productions of the world—our rapidly reduplicating population, spreading through our valleys and over our hills, and peopling our fair land with the industrious and enterprising of all nations—the wonderful progress of the natural sciences, upon which the art of successful cultivation depends—the facilities for intercommunication between all parts of the country and the world—the interest already awakened in our Association and the cause it seeks to promote, an interest which is manifested among us by hundreds of Agricultural and Horticultural Societies, increasing every year, and by the multitude of periodicals and publications which are devoted to its advocacy and advancement—these, all these urge us onward, right onward, to the accomplishment of our mission.

A brighter day has begun to dawn. It is within the recollection of many when the first Agricultural Society was organized in the United States; indeed, it is not fifty years since the establishment of the Horticultural Society of London, the first institution of the kind in the world. This was soon followed by kindred associations in France, Pennsylvania, Massachusetts and other places. Agricultural and Horticultural Societies, and Farmers' Clubs, spring up as by enchantment throughout our country, all zealously engaging in the work of improvement.

While we rejoice in these favorable indications, and in the cheering prospect before us, we are reminded, by the absence of those whom we have been wont to meet on similar occasions,
that the Destroyer has been among us. They involuntarily rise up before us, and their valuable services claim our grateful remembrance. When we were last assembled in this city, the "Farmer of Ashland" lay upon the bed of death, and has since been borne with distinguished funeral honors, amidst a nation's sorrow, far hence to the sepulchre of his fathers.

The great Landscape Gardener and Rural Architect of America, upon whose genius the Government depended for the laying out and adornment of the public grounds surrounding these premises, and who did so much to elevate the standard and to improve taste in the rural arts, conveniences, and refinements of life, was numbered with the victims by that awful disaster upon the waters of the Hudson, on the 28th of July last, which agonized the hearts of so many American citizens.

The cause of scientific agriculture in this country has sustained a great loss by the death of one of its most distinguished and promising professors—a gentleman, who, though young, had already made many valuable contributions to Agricultural literature, who had no superior of equal age, and from whose future labors much was anticipated. Downing and Norton are no more—both cut down in the midst of life and usefulness.

One of the distinguished representatives of the Essex Society of Massachusetts, the Hon. Judge Mack, of Salem, who was present and participated in the organization of this Society, a most worthy gentleman, and who filled with honor and integrity various stations in life, has also gone to his rest.

The "Marshfield Farmer" is also numbered with the mighty dead. He was a farmer—the son of a farmer, and the noblest production of American soil! His majestic form, his mountain brow, and expressive countenance, his deep, yet melodious voice, his whole person eloquent in every step and act, are bright visions on which we delight to dwell.

We fondly cherish the remembrance of him as he appeared in this assembly at the organization of our Society, and in the cordial manner in which he saluted the worthy representative of the immortal Washington, the "Farmer of Arlington." We love to think of his subsequent reception of us at his hospitable mansion in this city, and of the close of his eloquent address, and especially of his friendly benediction: "Brother farmers— I shall remember you, and the occasion which has called us
together. I invoke for you a safe return to your homes. I invoke for you an abundant harvest; and if we meet not again in time, I trust that hereafter we shall meet in a more genial clime, and under a kindlier sun."

Yes, sainted patriot; there, in those celestial fields, where the sickle of the Great Reaper shall no more cut down the wise and the good, we hope at last to meet thee—there, in those pure realms, where the rainbow never fades, where thy brilliant star shall shine with purer effulgence, and where the high and glorious aspirations of thy soul shall be forever realized!

These great and worthy men have ceased from their earthly labors, and are gone to that land whose bloom is perennial, whose fruit immortal, and whose harvest eternal. We live to promote a cause which was dear to their hearts, and to execute plans which they helped us form, and on which depended some of their most cherished hopes respecting the prosperity of their country, and the happiness of mankind.

Soon we shall be called to follow them; but let us rejoice that the cause we are seeking to promote will flourish when we are laid beneath the clods of the valley.

Gentlemen: Cheering prospects are before us. I dwell with pleasure on the bright future. I seem to see this Association enrolling among its members thousands of our intelligent yeomanry, and whether from the North or the South, the East or the West, all banded and leagued together as brethren by a common interest; a State Society auxiliary to this in every Commonwealth—County Societies, Farmers' Clubs, Agricultural Schools and Colleges, each drawing, from its own peculiar section and resources, the means of information and improvement, and all with united purpose and harmonious action, both disseminating and receiving aid from each other, and thus illustrating the power of voluntary associations under the fostering care of government, and tending to make ourselves and our beloved nation the most intelligent, enterprising, virtuous, happy, and powerful people on earth.

On motion of N. P. Causin, seconded by Thomas J. Rusk, of Texas, (who characterized the Address as able, and calculated to be very useful,) it was
“Resolved, That two thousand copies of the President’s Annual Address be printed for distribution, first to members of the Society, and then to such other persons as the Executive Committee may approve.”

It was subsequently ordered to print five thousand copies of this Address for distribution.

On motion of J. D. Weston, of Wisconsin, it was

“Resolved, That so much of the President’s address as refers to the co-operation of this Society with the General Government in the diffusion of agricultural knowledge, the distribution of seeds, plants, &c., be referred to a committee of three, with authority to report to the Executive Committee of the Society at such time as may suit their convenience.”

The committee appointed by the Chair under this resolution consists of Messrs. King, of New York, Brown, of Pennsylvania, and Medary, of Ohio—the mover having at his own request been excused from serving.

On motion of Dr. A. L. Elwyn, of Pennsylvania, a committee of one from each State and Territory represented in the minutes was appointed by the Chair, to nominate officers for the ensuing year.

The Chair appointed on this committee, A. L. Elwyn, of Pennsylvania, Chairman; Amos Tuck, of New Hampshire; B. Perley Poore, of Massachusetts; George G. King, of Rhode Island; Erastus Williams, of Connecticut; John A. King, of New York; D. B. Coles, of New Jersey; John Jones, of Delaware; C. B. Calvert, of Maryland; J. Roberts, of Virginia; Eben. Newton, of Ohio; C. Cory, of Indiana; E. J. Penniman, of Michigan; T. J. Rusk, of Texas; J. T. Weston, of Wisconsin; N. P. Causin, of the District of Columbia.

On motion of W. S. King, of Rhode Island, the Society decided to take up the recommendations contained in the President’s Address.

On motion of B. V. French, of Massachusetts, so much of the President’s Address as refers to Auxiliaries, Location, and Offices, and a Permanent Secretary, was referred to the Executive Committee.
On motion of John A. King, of New York, so much of the Address as relates to Funds was similarly referred.

A communication was received from J. L. Smith, Esq., of Washington, inviting this Society to unite with the Metropolitan Mechanics’ Institute, in the Fair, to be held in the city of Washington, from February 24th to March 17th. Mr. Smith further suggested, that a union of exhibitions be held every fourth year at Washington. The communication was laid on the table.

On motion of Dr. A. L. Elwyn, of Pennsylvania, the Corresponding Secretary was instructed to place a number of copies of the President’s Address, when printed, at the disposal of the Smithsonian Institution.

On motion of W. S. King, of Rhode Island, the Society requested Professor Mapes, of New Jersey, to deliver a Lecture on some agricultural subject on the evening of Thursday, 5th instant. Professor Mapes, being present, consented to comply with the wishes of the Society, and announced that his subject would be Fertilizers.

The President, having announced in his Address the reception of a communication from a committee of the Crystal Palace Association of New York, W. S. King, of Rhode Island, moved the following resolution:

"Resolved, That a committee of five be appointed by the Chair to confer with the committee appointed by the Crystal Palace Association, with full power to enter into a joint exhibition, if it shall in their opinion be deemed judicious; and that the President of this Society be a member and Chairman of this committee."

An amendment was offered, referring the whole matter to the Executive Committee, with power.

An animated discussion ensued, when, on motion of Simon Brown, of Massachusetts, it was

"Resolved, That this Society do not consider it expedient, in its infancy, to enter into an arrangement with the Directors of the Crystal Palace, at New York, in relation to a public exhibition; and that the Chair appoint a committee of three persons to inform the committee from that association accordingly."
The Committee appointed under this resolution are the President of the Society, Brown, of Massachusetts, and Medary, of Ohio.

On motion of B. Perley Poore, of Massachusetts, it was "Resolved, That when this meeting adjourns, it shall adjourn to meet at 9 A. M. to-morrow."

On motion, Marshall P. Wilder, Daniel Lee, and W. S. King, were appointed a committee on amendments to the Constitution.

The Chair appointed Messrs. B. V. French, of Massachusetts, John A. King, of New York, and Calvert, of Maryland, a Committee to audit the Treasurer's accounts.

The following preamble and resolution were offered by C. B. Calvert, of Maryland, and on motion of W. S. King, of Rhode Island, were made the order of the day for to-morrow at 10 A. M.

"Whereas the cause of Agriculture requires that its great interests should be represented in the councils of the nation—Therefore—

"Resolved, That Congress be memorialized to establish a Department of the Government, to be called the Department of Agriculture, the head of which Department, when established, shall be a Cabinet Officer."

On motion of John A. King, of New York, the meeting adjourned to Thursday, February 3d, at 9 A. M.

Thursday, Feb. 3d, 1853.

The Society met according to adjournment, at 9 A. M., in the Lecture-Room of the Smithsonian Institution. The President called the meeting to order at 10 o'clock.

The order of the day being the resolution of Mr. Calvert on the subject of memorializing Congress to establish an Agricultural Department of the Government, with its head a Cabinet Officer, was then taken up. It was, however, laid on the table temporarily, to receive the Report from the Committee on Nominations.

The Committee on Nominations reported the subjoined names for officers of the Society for the ensuing year (see p. 19).

The Report was temporarily laid on the table, to take up the Report of the Committee on revising the Constitution.
Marshall P. Wilder, from the Committee on revising the Constitution, submitted the following amendments:

In Section II. of the Constitution, as it appears on the 11th page of the first number of the Journal of the Society, and on the 7th line of the Section, change the word "Society" to Executive Committee. Passed.

In Section III., line 4, change the word "five" to seven; and insert General before the words "Board of Agriculture," on 9th line, after the words "President of the Society," insert the words the Corresponding and Recording Secretaries; change the word "member" to members; after the word "and" insert the word the; after the word "President" insert the words shall be Chairman. Passed.

Under title "Executive Committee," in the same Section, after the word "interests" on 4th line, insert the words, and shall have the supervision of the publications of the Society; after the word "Chairman," on same line, add the words in the absence of the President; strike out the word "three" and insert four. Passed.

Under title "Treasurer," in same Section, and on the second line, strike out the word "and," and insert the word or; change the word "Secretaries" to Secretary; on third line strike out the word "a" and insert another. Passed.

In Section IV., line second, strike out the word "first," and insert last; change the word "points" on line six, to places. Passed.

The amendments were unanimously adopted.

On motion of the Recording Secretary pro tem., Nicholas P. Causin, of Washington, D. C., was appointed Assistant Secretary pro tem.

Mr. John A. King, of New York, from the Committee to whom was referred the matter of an application to the Government for aid, reported the following resolution:

"Resolved, That the Executive Committee be requested to make immediate application to Congress for that portion of the money now annually appropriated to the Patent Office for the preparation of the Agricultural Report and the Collection and Distribution of Seeds, with the view to the performance of the same work by the United States Agricultural Society."
Mr. Wheeler, of Massachusetts, proposed a reduction of the fee for Life-membership from $25 to $10, with two dollars entrance-money and one dollar annual subscription. This reduction he thought would bring many members into the Society who might be excluded by the present terms. This opinion was favored by Mr. Brookes, of Massachusetts, and by Professor Mapes and Dr. Weston, so far as regarded Life-membership, but was strongly opposed by Messrs. A. B. Davis, Jones, of Maryland, Calvert, Roberts, and Reed, of Massachusetts. The Society finally determined not to make any change.

The order of the day, on Mr. Calvert's resolution, was then taken up, but temporarily laid aside to consider a resolution moved by Mr. Brown, of Massachusetts, which was unanimously adopted, as follows:

"Resolved, That the thanks of this Society be tendered the Hon. Samuel Appleton, Thomas H. Perkins, Josiah Quincy, and Robert G. Shaw, of Boston, who have so generously contributed to its funds, and thereby increased the ability of the Society to diffuse agricultural information throughout the country."

The following gentlemen were then proposed as honorary members of the Society, the proposition being warmly received and adopted, viz.: Millard Fillmore, Franklin Pierce, Samuel Appleton, Thomas H. Perkins, Robert G. Shaw, and Josiah Quincy, Sen.

[The President had previously announced a donation of $1,000 from Mr. Appleton, to the funds of the Society, and of other considerable amounts from Thomas H. Perkins, Robert G. Shaw, and others.]

The Committee to whom the matter was referred, reported a memorial to Congress, asking for "a portion of the money now annually appropriated to the Patent Office for the preparation of the Agricultural Report and the Collection and Distribution of Seeds," with a view to the performance of that service by the Society. This was thought to be all that was expedient to solicit from Congress at the present session. Hereafter, the establishment of an Agricultural Department, with a Cabinet Officer at its head, will be urged.
The resolution of Mr. Calvert, of Maryland, was then taken up. On motion of Mr. John Brookes, of Massachusetts, speeches were limited to ten minutes. Mr. Calvert advocated the resolution; Mr. French, of Massachusetts, followed, also in its favor.

[The President of the United States and Secretary of the Interior were here announced, when the members rose, and so remained until the President was seated.]

Professor Mapes, of New Jersey, having obtained the floor, proceeded to advocate the passage of the resolution:

The resolution was then unanimously adopted.

A letter was received from Robert C. Walker, Esq., of Pennsylvania, resigning the office of Recording Secretary, and declining a re-election.

The report of the Nominating Committee being next in order, on motion, J. D. Weston, of Wisconsin, and C. Cory, of Indiana, were appointed tellers, and the Society proceeded to ballot for Officers for the ensuing year.

[The President of the United States and the Secretary of the Interior here retired, with the respectful salutations of the Society.]

A communication was received from C. Cory, of Indiana, claiming to have discovered a remedy for Potato-Rot. Ordered to be placed on file.

While the tellers were counting the ballots, Hon. George Washington Parke Custis addressed the Society. His remarks will be found at the close of the number.

On motion of Professor Mapes, of New Jersey, Edmund Ruffin was unanimously elected an honorary member.

On motion of C. B. Calvert, of Maryland, 5,000 copies of the President's Address were ordered to be printed, in place of the 2,000 previously ordered.

Mr. J. D. Weston reported that the following gentlemen had been elected Officers of the Society for the year ensuing, viz.:
OFFICERS
OF THE
UNITED STATES AGRICULTURAL SOCIETY FOR 1853.

PRESIDENT.
MARSHALL P. WILDER, of Massachusetts.

VICE PRESIDENTS.

Ezekiel Holmes, of Maine,
G. W. Nesmith, N. H.,
Fred. Holbrook, Vermont,
B. V. French, Mass.,
Josiah Chapin, R. Island,
S. D. Hubbard, Conn.,
Henry Wager, New York,
James J. Mapes, N. Jersey,
Fred. Watts, Pennsylvania,
C. P. Holcombe, Delaware,
W. D. Bowie, Maryland,
G. W. P. Custis, Virginia,
Henry K. Burgwin, N. C.,
John Witherspoon, S. C.,
P. M. Nightingale, Georgia,
Richard Jones, Alabama,
Alex. H. Beques, Miss.,
A. B. Roman, Louisiana,

Samuel Medary, Ohio,
Robert Mallory, Kentucky,
M. P. Gentry, Tennessee,
Joseph A. Wright, Indiana,
S. A. Douglas, Illinois,
R. Atchison, Missouri,
T. B. Flourney, Arkansas,
J. C. Holmes, Michigan,
Simmons Baker, Florida,
T. J. Rusk, Texas,
W. F. Coolbaugh, Iowa,
A. C. Ingham, Wisconsin,
J. M. Horner, California,
J. H. Bradly, Dist. Col.,
S. M. Baird, New Mexico,
H. H. Sibley, Minnesota,
Joseph Lane, Oregon,
Jos. L. Hayes, Utah.

EXECUTIVE COMMITTEE.

C. B. Calvert,
John A. King,
A. L. Elwyn,
J. D. Weston,
Moses Newell,

A. Watts,
Richard Peters,
J. C. G. Kennedy,
W. S. King,

EX-OFFICIO.

CORRESPONDING SECRETARY.
JOS. C. G. KENNEDY, Washington, D. C.

RECORDING SECRETARY.
W. S. KING, Rhode Island.

TREASURER.
WILLIAM SELDEN, Washington.
The Treasurer presented his Report, by which it appeared that the funds on hand amounted to $1,920.62.

Dr. Reed, of Massachusetts, offered a resolution, which was passed, as follows:

"Resolved, That the subject of Lectures before this Society at its future meetings, and the selection of Lecturers, be referred to a select committee of five, of whom Professor Henry, of the Smithsonian Institution, and the President, shall be members."

The Chair named as the Committee under this resolution, Professor Henry, and Messrs. Wilder and Reed, of Massachusetts, Calvert, of Maryland, and the Corresponding Secretary.

A vote of thanks of the Society was then passed to the Secretary of the Smithsonian Institution, for his courtesy in extending so much accommodation to the Society.

The President of the Society here took occasion to respond to the distinction conferred upon him by his re-election as President.

On motion of C. B. Calvert, of Maryland, the Corresponding Secretary was directed to notify all the Officers elected, and who were not present, of their election; and to transmit to them a copy of the Transactions of the Society; and to request their acceptance. If there be no reply, or if any Officer shall decline the office to which he is elected; then, and in such case, it shall be the duty of the Executive Committee to fill all such vacancies.

Dr. Elwyn, of Pennsylvania, presented a paper, written by Professor Booth, of Philadelphia, on "The Inadequacy and Inutility of Chemical Analyses of Soils," which was read by the Secretary.

Professor Mapes hoped it would not be placed among the Transactions of the Society, as he differed with its able and learned author on the subject, and believed he could successfully disprove his positions. There was evidence on every hand, both in England and America, that Agriculture had derived incalculable benefit from the analyses of soils.

On motion of Dr. Elwyn, the paper was ordered to be returned to him (Dr. Elwyn), that he might have an opportunity to consult with the writer; and in case Professor Booth authorized its pre-
sentation, it would be presented to the Society at the next annual meeting.

On motion of John A. King, of New York, all the matters referred to the Executive Committee were continued in their hands until the next annual meeting.

On motion of Mr. Poore, of Massachusetts, it was

"Resolved, That a circular, in the name of the Society, be addressed by the Corresponding Secretary to the various Agricultural Boards and Societies in this Republic and in other lands, requesting, if convenient, copies of their reports already published, with an exchange of future publications."

The Society then adjourned to meet at 7 P. M.

Thursday Evening, Feb. 4th.

The Society met pursuant to adjournment, the President in the Chair, who introduced to the Society Professor Mapes, of New Jersey.

Professor Mapes then proceeded to deliver an interesting and able Lecture on "Fertilizers." The learned Professor was frequently interrupted by applause; and at the conclusion of his remarks was detained for an hour in answering the questions addressed to him by the audience.

On motion of Mr. Wheeler, of Massachusetts, the thanks of the Society were voted to the Officers of the Society for the last year, and to the Reporters for the National Intelligencer and for the Associated Press, for their attendance at our meetings, and for their faithful and judicious reports of our transactions.

On motion, the thanks of the Society were tendered to Professor James J. Mapes, of New Jersey, for the able and interesting Lecture delivered this evening, before the United States Agricultural Society; and a copy was requested for publication among the Transactions of the Society.

The Society then adjourned sine die.
Agricultural Rooms, Albany, March, 1853.

This Society was incorporated by the Legislature, in the year 1832, and Le Ray de Chaumont was its first President. In 1833, a Cattle-Show was held at Albany, which was very creditable to the State, in the exhibition of stock, implements and produce; but as the Society was not in possession of funds to award premiums, no subsequent exhibition was held.

In 1834, the Society undertook the publication of a paper at Albany, devoted to the interests of agriculture, and the "Cultivator" was established, with the late Jesse Buel as its editor and conductor. This paper was a powerful aid to the cause of Agriculture, and enlisted much interest in the subject. Efforts were made for several successive years to obtain from the Legislature some efficient aid to Agriculture, but without success, until 1841. In that year a re-organization of the Society took place, and a General Exhibition and Cattle-Show was decided upon. The Legislature then appropriated the sum of $8,000, to be distributed among the State and County Societies, on an equal sum being raised by each Society as allotted to them in the division of this amount. During the year a large number of County Societies were organized, and three exhibitions were held. The State Society held their first exhibition at Syracuse, and it far exceeded the expectations of the most sanguine; showing most conclusively that there was already a preparation throughout the State for the great work in which the Society was engaged.

The County Associations increased rapidly, and there are at this time organized Societies in successful operation in fifty-one
counties of the State, exerting an influence in their respective localities of the most salutary character.

The State Society has held its annual exhibitions in different sections of the State, which have increased each year in interest and importance, and have become even national in their character. A volume of Transactions has been annually published since 1841, by the liberality of the Legislature, and these volumes are distributed among the Societies, and are awarded as premiums. They contain a mass of valuable matter that cannot be found in any other works—being mainly the results of practical farming in the State. Many valuable Prize Essays of the highest character have also been published by the Society, which are exerting an influence throughout our own and other countries, in elevating the profession of the farmer, stimulating him to higher and more noble efforts in that profession. A list of some of the more valuable of these accompanies this report. Among them will be found Professor Norton's Elements of Scientific Agriculture, which has found its way into the schools of our own as well as other States, and the British Provinces. Had its lamented author done nothing but this in his labors for the advancement of this great interest, he would have been em- balmed in the affections of the American Farmer to the latest time. Our Transactions contain, however, many other valuable articles from his pen, and we unite with all who knew him in sorrowing over his early grave. Yet if a man's life is to be valued, as it evidently should be, by what he has accomplished, few men in our country have lived to better purpose, and done more for their country and the world, than John P. Norton.

The analysis of Indian Corn, by Prof. J. H. Salisbury—a prize article—is one of the most thorough and complete that has ever yet been made, and shows the valuable properties of this extensive product of our country—than which, no other country can produce its superior for all the purposes to which it is applicable.

The History and Character of the Hessian Fly, an insect so destructive to our wheat crops, written by Asa Fitch, M. D., of Salem, N. Y., one of the distinguished Entomologists of our country, is the fullest and most accurate description of that insect that has yet appeared. Dr. Fitch has also furnished a
most valuable article on the Wheat Fly, often, (though inaccurately,) designated as the Weevil. Several other valuable articles by the late Willis Gaylord and J. J. Thomas, on insects destructive to vegetation, are found in the Transactions.

On the subject of the Dairy—an interest of vast importance to our State and country—several valuable articles will be found, prepared by the Secretary of the Society, giving the practices of the most experienced and successful dairymen in the State, both in the manufacture of Butter and Cheese. The importance of calling attention to this great branch of domestic industry, may be seen by the fact, that from 1845 to 1850, though the number of cows decreased 68,066, the increase of cheese manufactured was 12,991,427 lbs.; and of butter, 264,361 lbs.—showing that the dairymen of New York have, by their skill and management, succeeded in elevating the standard of our dairy products, and improving in a very marked degree the quality of our dairy animals. The average yield of cheese per cow, as estimated in 1845, was 110 lbs. each; while the yield in 1850, adopting the same standard of estimate, gives a fraction over 160 lbs. each—showing an increase per cow, at the average price at which cheese was probably sold, (6 cts.,) of about $37.50 each—amounting to $1,162,962, for the whole number of cows employed in the cheese dairies alone—a revenue to the farmers engaged in this business, equal to nearly one-half the annual income of our canals. The increase of butter, though not so large, is still very great, and shows most conclusively the advance which has been made in this department of Agriculture, and in which, from the character of our soil and climate and the facility of our markets, we are not likely to be superseded by any section of our country.

The Society has ever kept before the minds of the farmers of our State the importance of doing well what they did do, and the premium farms, to which awards have been made from year to year, give assurance that the exertions which have been made, have not been without effect. From the statement of one of the competitors, Mr. Albert G. Ford, a dairy farmer of Herkimer county, which will be found in the Transactions of 1851, it will be seen that his yield of cheese per cow has averaged for the last three years, upwards of 600 pounds. Should this ratio
be continued throughout the State, or even to 400 lbs. per cow, the increase would amount to millions of dollars annually; and we see no good reason why this may not, in a good degree, at least, be expected. In a Report made to the Society in 1846, by the present Secretary of the Society, it was shown that the yield in the cheese dairies of our State might be increased to 400 lbs. per cow, without extra feed; and the experience of the past five years strengthens the opinion there expressed. The success of Mr. Ford and many other dairymen who might be named, gives increased assurance that this will yet be attained in our State.

In the Transactions for 1851, is a valuable article on the uses of Phosphate of Lime. The discovery of extensive beds of this valuable mineral in the State of New York, has opened a mine of wealth to the farmers of our country which only needs to be known to be appreciated. Of such importance is it for use in England, that large orders have been received for it; and there have been prepared at the mines the past season upwards of 100 tons for the market. But the limits of this paper will not justify a more detailed allusion to the articles which have appeared in our Transactions, and which are among the results of our efforts to forward this all-important branch of Domestic Industry in our country.

The Report of the Society for 1852, which has not yet been printed, though in the course of publication, contains, among other valuable papers, the following:

"REPORT ON THE TRIAL OF IMPLEMENTS.

"The necessity of a trial of those implements which are indispensable to the farmer, and whose value cannot be determined without a thorough trial, has long been felt. In 1850, the Society instituted a trial of Ploughs, which was of the most satisfactory character, occupying the Judges having the matter in charge, eight days. The results of that trial were so marked and beneficial, as to have more than met the expectations of the Executive Committee. This encouraged the trial of another class of implements, second only in importance to the plough. A Committee, composed of the most distinguished gentlemen in our State, was selected to superintend the trial of Mowing and
Reaping Machines, Horse Powers, Drills, Cultivators, Threshing Machines, Separators, Broad-Cast Sowing Machines, and Steam Engines, for farm purposes. The trial of these various machines was of such a character in all respects as to satisfy every competitor at the time, and was most gratifying to an immense body of farmers who were in attendance from all parts of the State. No effort was spared to arrive at reliable and practical results in every case, and it is believed that no trial so thorough and minute in every important particular, has ever been had in this or any other country. The great variety of machines in our country evidences the urgent necessity that existed for a complete and satisfactory trial; and while it is not assumed that in every case the judgment passed upon the machines may not have failed in some respects to do complete justice to some one machine, still it is believed that those to which the awards were made, will fully sustain the judgment of the Committee; and in the hands of the farmer in the field, will fully justify the awards made. A copy of the Report of this important trial is annexed."

In addition to this Report will be found a somewhat full Report on the Dairy, and analysis of several varieties of vegetables, by Prof. Salisbury; and a most valuable Address from the late Prof. Norton, being his opening lecture on "Science and Agriculture," before the Scientific Department of the University of Albany, January, 1852. It is one of his best performances; and being among his last labors for the good of the cause to which he had devoted himself, it will be read with no little interest by every one who feels in any degree the importance of elevating the profession of Agriculture.

The following extracts from this Address, on the advantages of science to Agriculture, are important, and will attract the attention of every inquirer after truth: "Science does not condemn practical experience. With the latter alone, we are certain of an existence—while without it, no matter how good our theory, we are not. Experience is indispensable. Of the two, then—theory and practice—if but one can be had, we must certainly select the latter. But we should have them united. Without the theory—without a system developed upon certain great fundamental truths—our progress must be slow. Our only way,
in the absence of such general principles, is to experiment for ourselves, and our neighbour must do the same for himself. And where all this is done, still nothing is established, no foundation is laid, no principle is demonstrated which shall be of benefit to us under different circumstances, or to the community at large. A farmer who cultivates one kind of land, writes to a paper, that he has adopted a certain mode of culture for a particular kind of crop and has met with success, and hence recommends it to all as the result of his experience. Another, with soil totally different, is highly incensed at this, for he has tried the same mode and failed. He therefore writes and contradicts it. Now this strife might go on forever, unless science stepped in and settled it, just as she settles it in the case of cheese, already referred to. She tells us soils are different in their composition — one requiring, for instance, lime to produce a wheat crop, and another not needing any such application. Hence, two farms cannot, under ordinary circumstances, be cultivated exactly alike. The only way is to establish general principles by the aid of science, and not trust to individual experience. A change is now coming over the minds of farmers. They are beginning to see that a scientific knowledge of the soil is necessary. And as this truth becomes more and more impressed upon them, as they introduce more and more practical results among them, the farmer's progress will be seen. He will become a thinking, as well as a working man. His character will grow as well as the profits of his land. He will be candid, inquiring, and disposed to receive the truth. He will not reject anything simply because it is new. And by this, the pleasure of the business will be increased. As we understand, so we enjoy just in that proportion. The farmer's life, as it generally is at the present day, is a matter-of-fact business, promising little attraction for a mind that loves to search for truth and seek out knowledge. But when connected with science, it at once assumes new colors. It then becomes a study — a study of interest. Beauty lies all around the farmer. He is in league with Nature. Her attractions are unfolding continually. He finds that nothing is dead in the sense he has heretofore attributed to that word. How delightful for him to study her changes! The germination of the seed, for instance; the unfolding of beauty presented in that
alone would repay weeks and years of study. Seeds will and have lived thousands of years, under certain conditions. At the end of that time, expose them to the right temperature, place them in favorable position, and they sprout and germinate as well as they would have done the first of their existence. In this manner, we can take seed-wheat from Egyptian catacombs, and raise, in our times and on our soil, the same plant that flourished on the banks of the Nile. Nothing is more interesting than to follow out these investigations, as science points the way."

CHEMISTRY AS APPLIED TO AGRICULTURE.

In Professor Norton's Address before the Society, in 1851, on the "Connexion of Science with Agriculture," the following remarks on chemistry, as applied to Agriculture, are found, which are deserving of the most careful consideration by every association engaged in directing the farmer to improvement in his profession by the aid of science. It is by neglecting this most salutary advice that persons, incompetent for their work, have, by boasted achievements, led farmers to adopt their often crude suggestions, and the result has been not only a pecuniary loss, but a distrust of everything relating to science as applicable to their profession.

Professor N. says: "There is no department of Scientific Agriculture where a greater lack of precise and definite information is shown, than in that of Chemistry. This is partly the fault of enthusiastic writers on the subject, and partly the result of imperfect teaching by those who are not sufficiently familiar with the science they are supposed to understand. I wish upon this subject I could make myself heard and comprehended by every enlightened farmer in the United States; for all my observation and experience have led me to the conclusion that here is one of the most fertile, if not the most fertile, source of injury to the general cause of improved Agriculture.

"It has been, and still is believed by many farmers, that this whole subject of Chemistry is, to the initiated, as clear as noon-day, and that the process of initiation is a simple and by no means lengthy one. The general idea seems to be, that in about the time that a young man can learn to shovel earth dexterously
into a cart, he may also become capable of analyzing a soil. You all know that a man cannot become a first-rate ploughman in one or even two seasons; that those who take the highest rank must make it almost their business; but the mysteries of Chemistry may be conquered in a few weeks, and a soil, after going through some mechanical process, is just as certain to come out right, as grain is to come out clear from a well-constructed fanning-mill.

"Gentlemen, this is a great and fatal mistake. I do not blame the farmers for it, but those scientific men, who, from interested or sincerely mistaken motives, have inculcated such views. That you may not think me extravagant, allow me, at the risk of being considered somewhat egotistical, to bring myself forward as an instance. I stand here to-night as a professed agricultural chemist; for the last seven years this has been, including of course, other connexions of Science with Agriculture, my sole object of study. The exceptions have been so few as to allow me to say that I have written upon nothing else, have worked upon nothing else, have studied nothing else. In this pursuit, too, I have, according to my own estimation at least, been diligent, and may, perhaps without question, claim to have acquired as much as the average of students would have done in the same time. Seven years, then, have been devoted almost exclusively to this study; and now, at the expiration of that time, you would be surprised if you could know my own real estimate of the knowledge gained, in comparison to that which to me is a sealed book. This is no parade of false humility—no trick to call forth praise—it is perfectly sincere. The words of Newton must come up vividly to all who venture into the fields of science, and begin to comprehend how vast and illimitable they are—how circumscribed the extent of our acquisitions in comparison with what lies beyond. I say to you frankly, that when you meet a man who makes all of these easy, who pronounces with entire confidence upon every theoretical point, who reads his analysis of your soils or your plants, as you would read a book, distrust that man; for he is either intentionally imposing upon you, or he thinks he knows what he does not."

The opening Lecture of Professor James Hall, on Geology, as connected with Agriculture, and that of Professor
GoADby, on Entomology, will be found interesting and most valuable.

One of the most useful articles that has appeared in the Transactions, is one on Curing and Preserving Meats, and the Value of the Salt of our own State, by Professor GEORGE H. Cook, of Albany. Professor Cook visited England and the Continent, in 1852, and possessed himself of all the facts connected with this important subject, from the Government depôts in those countries. In addition to these, information from the most celebrated packers in this country, at New York, Chicago, &c., has been secured; and our farmers and feeders, when they shall have read this valuable article, will learn much that will enable them more perfectly to rear and prepare their cattle for the slaughter.

An interesting Essay on the Influence of Rural Pursuits on the Human Mind, is also among the articles submitted.

A very valuable article from Dr. Fitch, on some of the Insects injurious to Wheat, not heretofore described by him, will be found of much interest and importance.

The Survey of the County of Essex, by WINSLOW C. WATSON, Esq., opens one of the richest fields of Mineralogy that our country affords. The iron ores of this region have long been famed—and iron and steel made from the ores of the Adirondack mines in this county, exhibited at the Great Industrial Exhibition in London, in 1851, and which received a prize-medal there, were pronounced equal to any exhibited in that great convocation of the industry of the world

In addition to the iron ore, the phosphate of lime, plumbago, and copper, have been developed; and in its fertilizing marls and other deposits, the survey opens a wide field for the benefit and advantage of the inhabitants, and will, when more fully developed, prove of immense importance to our State, and to the country at large.

There are many other valuable articles in the Report, which it is not perhaps necessary particularly to notice here.

As an Appendix to the Transactions of the Society for 1851, the Legislature ordered published the Report of B. P. JOHNSON, Secretary of the Society, who was appointed by His Excellency, Governor HUNT, as the Agent of the State at the Great Indus-
trial Exhibition in London. While it does not become me to speak particularly of that Report itself, it is proper to allude to it here, as showing the liberality of the Legislature in spreading before the farmers of our State and country this document, designed for their benefit, illustrating as it does the triumph of American Implements and Industry, in the great and friendly competition which then took place.

Of the Transactions of the Society, from 2,000 to 4,000 volumes have been annually distributed through the State and County Societies, and a still larger number through the members and officers of the Legislature.

The Society, since 1841, has distributed in cash premiums among the farmers and mechanics of this State and others, upwards of $40,000; and in addition thereto in medals, Transactions, and valuable and useful works, a very large amount.

Among the many influences which have combined to advance the great interests of Agriculture in this State, none have been more important than the efforts made by an enlightened and ably edited Agricultural Press. The papers devoted to this object in our State have been of a high character, edited by able men, and they have ever most efficiently sustained the State and County organizations in their work. They have prepared the public mind for the efforts which have been put forth to advance this great interest; and while they have been liberally sustained by the farmers, they have in return contributed most essential aid to the farmer, by which he has been enabled to make advances of a most gratifying character.

It may not be inappropriate to give the names of the gentlemen who have been selected as the presiding officers of the Society since its organization; among whom will be found some of the most efficient and active friends of the Agricultural interest. Previous to 1841, the presiding officers were Le Ray de Chau-mont, Jesse Buel, Archibald M'Intyre, John P. Beekman, Anthony Van Bergen, and Francis Rotch. Since 1841, Joel B. Nott, James S. Wadsworth, John P. Beekman, B. P. Johnson, John M. Sherwood, George Vail, Lewis F. Allen, John A. King, E. P. Prentice, John Delafield, Henry Wager, and Lewis G. Morris.

With them have been associated many of the most valued and
efficient gentlemen of the State, interested in the advancement of Agriculture, whose labors have been of the most important character in forwarding the cause, and to whose counsel and efficient aid the Society has been indebted for the progress which has been made.

The subject of Agricultural Education has engaged the most careful attention of the Society, and efforts have been perseveringly made for the establishment of an Institution connected with an experimental farm worthy of the State. As yet, this has not been secured; but it is hoped that the present Legislature will accomplish in some form what has been so long desired, as a most important auxiliary in the great work to be performed. Great anxiety for the establishment of an institution of this description, suited to the wants of the farmers and mechanics of the State, is manifested in every section; and it cannot, we think, be long before this demand will be satisfied. If intelligence be the birthright of every citizen of our country—if, in proportion as our citizens are intelligent, will be their value as members of our confederacy, no argument can be necessary to show that the great interest we represent, comprising four-fifths of our population, should not be neglected. While we are ready to contribute, as we have done, to the education of every other class in the community, in such a manner as will best enable them to discharge the duties of their particular pursuit, we but ask in return that this great interest of our State and Nation shall not be passed by, but that we shall be, by education, placed in a position equal to any other; so that, when called upon, either in the councils of the nation or elsewhere, we may be enabled properly to exhibit to the world what the true position and character of an American farmer is, and what, from the very nature of our free institutions, they are designed to be, as distinguished from those of any other country under the whole heavens.

In closing this very brief and imperfect sketch of our Society, made in the midst of most pressing engagements upon every moment of my time, I must apologize for its deficiencies; but I trust it may not prove entirely without benefit in your Journal, about to be published.

Very respectfully yours,

B. P. JOHNSON.

# List of Articles

**Published by the New-York Agricultural Society.**

<table>
<thead>
<tr>
<th>Date of Pub.</th>
<th>Article</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>1842</td>
<td>Agricultural Schools</td>
<td>A. S. Wynkoop</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Education.</strong></td>
<td>John Greig</td>
</tr>
<tr>
<td>1847</td>
<td><strong>Schools.</strong></td>
<td>Rev. S. Luckey</td>
</tr>
<tr>
<td>1847</td>
<td><strong>Societies, Advantages of.</strong></td>
<td>D. A. Ogden</td>
</tr>
<tr>
<td>1848</td>
<td><strong>Societies of Vermont.</strong></td>
<td>C. Goodrich</td>
</tr>
<tr>
<td>1848</td>
<td><strong>Survey of Washington Co.</strong></td>
<td>Asa Fitch</td>
</tr>
<tr>
<td>1848</td>
<td><strong>Institute.</strong></td>
<td>John Wilkinson</td>
</tr>
<tr>
<td>1849</td>
<td><strong>Discussions on Education, Fruits, Wheat Culture, &amp;c.</strong></td>
<td></td>
</tr>
<tr>
<td>1849</td>
<td><strong>Statistics.</strong></td>
<td></td>
</tr>
<tr>
<td>1851</td>
<td><strong>Value of Phosphate of Lime; Prize Essay.</strong></td>
<td>Joseph Harris</td>
</tr>
<tr>
<td>1851</td>
<td><strong>Statistics of New York, 1850.</strong></td>
<td>J. Delafield</td>
</tr>
<tr>
<td>1850</td>
<td><strong>Dynamics.</strong></td>
<td>J. J. Thomas</td>
</tr>
<tr>
<td>1841</td>
<td><strong>Agriculture of South Carolina.</strong></td>
<td>Hon. J. R. Poinsett</td>
</tr>
<tr>
<td>1844</td>
<td><strong>South Carolina.</strong></td>
<td>Hon. J. R. Poinsett</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Pennsylvania.</strong></td>
<td>W. Penn Kinzer</td>
</tr>
<tr>
<td>1841</td>
<td><strong>Virginia.</strong></td>
<td>James M. Garnett</td>
</tr>
<tr>
<td>1841</td>
<td><strong>England.</strong></td>
<td>John Hannam</td>
</tr>
<tr>
<td>1842</td>
<td><strong>Indiana.</strong></td>
<td>Solon Robinson</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Indiana.</strong></td>
<td>F. A. Howard</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Maryland.</strong></td>
<td>G. B. Smith</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Mississippi.</strong></td>
<td>M. W. Philips</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Malta.</strong></td>
<td>W. Winthrop Andrews</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Winnebago, Illinois.</strong></td>
<td>Anson S. Miller</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Addison Co., Vermont.</strong></td>
<td>Solomon W. Jewett</td>
</tr>
<tr>
<td>1844</td>
<td><strong>East Windsor, Conn.</strong></td>
<td>Henry Watson</td>
</tr>
<tr>
<td>1847</td>
<td><strong>Vermont.</strong></td>
<td>Chauncey Goodrich</td>
</tr>
<tr>
<td>1847</td>
<td><strong>Its principles.</strong></td>
<td>Fred. A. Ford, S. Carolina</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Reports on.</strong></td>
<td>Dr. D. Lee</td>
</tr>
<tr>
<td>1844</td>
<td><strong>Analysis of Soils.</strong></td>
<td>Willis Gaylord</td>
</tr>
<tr>
<td>1848</td>
<td><strong>of Indian Corn.</strong></td>
<td>Prof. J. H. Salisbury</td>
</tr>
<tr>
<td>1849</td>
<td><strong>of the Apple and Rhubarb.</strong></td>
<td>By same</td>
</tr>
<tr>
<td>1850</td>
<td><strong>of the Jerusalem Artichoke.</strong></td>
<td>By same</td>
</tr>
<tr>
<td>1850</td>
<td><strong>of the Parsnip.</strong></td>
<td>By same</td>
</tr>
<tr>
<td>1850</td>
<td><strong>of Rocks and Soils.</strong></td>
<td>By same</td>
</tr>
</tbody>
</table>
Angola Grass. P. Lund Simmons, London ............................. 1846
Ayrshire Cattle. Sanford Howard ................................. 1851
Appendix. B. P. Johnson's Report on the Great Exhibition,
London ........................................................................ 1851
Address, by Prof. J. P. Norton, on the Connexion of Science
with Agriculture ............................................................. 1851
Address, by Prof. J. P. Norton, on Scienee and Agriculture .. 1852
" " James Hall, on Geology ................................................ 1852
" " Goadby, on Entomology ................................................ 1852
Bees, Care of, &c. J. M. Weeks, Vermont ....................... 1842
Bones, as Manure. Jas. F. W. Johnston, England ............. 1847
Cattle. H. S. Randall ...................................................... 1841
" their best Breeds, &c. Hemin Chapin ............................. 1841
" with Sheep and Root Culture. D. S. Curtis .................... 1841
" best Breeds and Crossing. J. H. Hepburn, Penn. ........... 1842
" Native and Crossing. H. S. Randall ............................. 1842
" Ayrshire. George Randall ........................................... 1842
" Improved Breeds, &c. B. P. Johnson ............................ 1843
" Scottish Highland. Sanford Howard ............................. 1843
" Soiling. R. L. Pell .................................................... 1844
" English, their Breeds, &c. Geo. Drake, England ............ 1844
" Galloway. Sanford Howard ........................................ 1846
" Red Sea. Z. Pratt ...................................................... 1848
Canada Thistles, Essay on. A. Stevens ............................ 1846
" " " Sereno E. Todd ...................................................... 1846
Charcoal as a Manure. J. H. Hepburn, Penn. .................. 1841
Cheese Dairies, Account of. B. P. Johnson ..................... 1847
Corn-stalk Sugar, making. M. Adams ............................. 1843
" its Cultivation, &c. George Geddes and others ............. 1844
" Experiments on. W. D. Osborne .................................. 1847
Cranberry, its Cultivation. Sullivan Bates ....................... 1844
Currant Moth, its Habits, &c. Asa Fitch ......................... 1847
Cetonidae, the Potato Insect. Miss M. H. Morris .......... 1849
Composition of the Milk of the Jersey, Ayrshire, and Native
Cows ............................................................................ 1850
Culture of the Potato. C. E. Goodrich ............................ 1851
Curing and Preserving Meats, different Varieties of Salt,
Cause of Coloring Meats, &c. Prof. Geo. H. Cook .......... 1852
California, its Agricultural Capabilities. H. G. Warner ..... 1851
Designs, Farm-house, &c. John J. Thomas ....................... 1842
" Farm-building, &c. D. G. Mitchell, Conn. ..................... 1842
" Farm-building. T. M. Niven ........................................ 1842
" Farm-cottage. Mrs. S. Howard .................................... 1847
" a Piggery. S. W. Jewett ............................................. 1847
" Farm dwellings. F. R. Elliott, Ohio ............................. 1848
Draining. Holkam ....................................................... 1842
Draining, Remarks on. J. P. Beekman 1847
" Experiments on. A. D. Spoor 1847
" Thorough. E. J. Woolsey 1847
" Remarks on. J. Delafield 1848
" John Johnston and T. G. Yeomans 1851
" R. J. Swan 1852
Dairies, Experiments in the Management of Cheese Dairies.
Alonzo L. Fish 1847
" Cheese and Butter. B. P. Johnson 1847–8
Dairy Buildings. H. Clapp 1852
Education and Agriculture. Alexander Walsh 1842
Experiments on Indian Corn
" Oats. W. D. Osborne 1847
" Wheat. 1848
Experiments in planting Potatoes at different Distances and
with different Manures. H. H. Eastman 1852
Farm Management. Willis Gaylord 1842
Farms, size of, Weeds, &c. Henry H. Hopkins 1842
Farm-house Hints. A. J. Downing 1845
Farm Management. J. J. Thomas 1844
Fences. H. S. Morse 1841
Fruit Garden. David Thomas 1841
Fruits, Hints on describing. John J. Thomas 1842
Fruit of Oneida County, Agricola 1847
Fruits and Fruit Culture. F. R. Elliott 1848
Fruit Culture in Ohio. F. R. Elliott 1849
Flax, Method of Cultivation and Preparation. W. Newcomb 1849
" Analysis of Seed and Straw 1849
" Special Manure for Flax Crop 1849
French Merino Sheep, their History 1851
Grape and Strawberry Culture. N. Longworth 1848
Grape, its Culture, &c. L. B. Longworth 1841
Grape Culture. H. Longworth, Cincinnati 1846
Geology and Agriculture. Willis Gaylord 1841
" Advantages of. Algernon S. Roberts, Phila. 1848
Geological Survey of New York. Professor James Hall 1843
Gypsum and Red Clover. Wm. Penn Kinzer 1844
Grain-mill, iron. A. B. Allen 1847
Grain-weevil, Account of. J. E. Gavit 1848
Grass Cloth of China. Dr. D. J. Macgowan 1849
Hemp, its Culture. James Sawyer 1841
Horses, Winter keep of. Ezra Meech, Vermont 1841
" their best Breeds. Wm. B. Ludlow 1841
Hedges of Thorn, &c. M. B. Bateham 1844
Hessian Fly, History, Character, &c. Asa Fitch, M. D. 1846
Insects injurious to Field and other Crops. Willis Gaylord 1843
<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Date of Pub.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insects and Diseases of the Wheat Crop</td>
<td>John J. Thomas</td>
<td>1843</td>
</tr>
<tr>
<td>Irrigation, Essay on</td>
<td></td>
<td>1845</td>
</tr>
<tr>
<td>Imported cattle</td>
<td>A. Stevens</td>
<td>1849</td>
</tr>
<tr>
<td>Influence of Rural Life on the Human Mind</td>
<td>H. C. Wilson</td>
<td>1852</td>
</tr>
<tr>
<td>Jersey or Alderney Cow.</td>
<td>Col. J. Le Couteur, Bellevue, Jersey</td>
<td>1850</td>
</tr>
<tr>
<td>Leather, its Value and Extent</td>
<td>Charles Leupp</td>
<td>1846</td>
</tr>
<tr>
<td>Lime and its uses.</td>
<td>R. L. Pell</td>
<td>1846</td>
</tr>
<tr>
<td>&quot; and Marl, uses of.</td>
<td>James Hyatt</td>
<td>1848</td>
</tr>
<tr>
<td>Manufacturing and Wool-growing interest</td>
<td>Samuel Lawrence</td>
<td>1841</td>
</tr>
<tr>
<td>Madder, its Cultivation</td>
<td>M. B. Bateham</td>
<td>1843</td>
</tr>
<tr>
<td>Manures, preparation, &amp;c.</td>
<td>Willis Gaylord</td>
<td>1842</td>
</tr>
<tr>
<td>&quot; their waste.</td>
<td>L. B. Langworthy</td>
<td>1844</td>
</tr>
<tr>
<td>&quot; special doctrine of.</td>
<td>D. P. Gardner</td>
<td>1846</td>
</tr>
<tr>
<td>Massachusetts Agricultural Society, origin and progress</td>
<td>John Welles</td>
<td>1844</td>
</tr>
<tr>
<td>Meteorology</td>
<td>J. H. Salisbury</td>
<td>1848</td>
</tr>
<tr>
<td>Mulberry, its Cultivation</td>
<td>D. Stebbins</td>
<td>1841</td>
</tr>
<tr>
<td>Marl deposits in N. Y.</td>
<td>E. Merriam</td>
<td>1849</td>
</tr>
<tr>
<td>Mount Airy Agricultural College</td>
<td></td>
<td>1849</td>
</tr>
<tr>
<td>North American Pomological Convention, Fruits recommended</td>
<td></td>
<td>1849</td>
</tr>
<tr>
<td>Orchard, its Culture and uses of the Apple</td>
<td>J. J. Thomas</td>
<td>1844</td>
</tr>
<tr>
<td>Oxen, their use, &amp;c.</td>
<td>J. S. Skinner</td>
<td>1844</td>
</tr>
<tr>
<td>On the Culture of Parsnips</td>
<td>Col. Le Couteur</td>
<td>1851</td>
</tr>
<tr>
<td>Pigeon-weed, Essay on</td>
<td>Charles M. Starke</td>
<td>1846</td>
</tr>
<tr>
<td>Poultry, Essay on</td>
<td>C. N. Bement</td>
<td>1841</td>
</tr>
<tr>
<td>Potato-rot, Essay on</td>
<td>Andrew Bush, Pa.</td>
<td>1845</td>
</tr>
<tr>
<td>&quot; in Scotland.</td>
<td>J. P. Norton</td>
<td>1845</td>
</tr>
<tr>
<td>&quot; Essay.</td>
<td>C. E. Goodrich, Utica</td>
<td>1847</td>
</tr>
<tr>
<td>&quot; results of Culture.</td>
<td>C. E. Goodrich</td>
<td>1848</td>
</tr>
<tr>
<td>&quot; the Sweet.</td>
<td>S. S. Riddle</td>
<td>1848</td>
</tr>
<tr>
<td>Provision Trade</td>
<td>T. C. Peters</td>
<td>1844</td>
</tr>
<tr>
<td>Plank-roads, construction of, &amp;c.</td>
<td>Geo. Geddes</td>
<td>1846</td>
</tr>
<tr>
<td>Plough, Improvement of</td>
<td>A. B. Allen</td>
<td>1846</td>
</tr>
<tr>
<td>Poultry.</td>
<td>H. D. Richardson, Great Britain</td>
<td>1849</td>
</tr>
<tr>
<td>Prize Essay; Elements of Scientific Agriculture</td>
<td>Prof. J. P. Norton</td>
<td>1849</td>
</tr>
<tr>
<td>Potato Disease</td>
<td>Gardner Cox</td>
<td>1850</td>
</tr>
<tr>
<td>Preparation of Manure for Root Crops</td>
<td>D. L. Barker</td>
<td>1851</td>
</tr>
<tr>
<td>Preparation of Flax</td>
<td></td>
<td>1852</td>
</tr>
<tr>
<td>Rotation of crops</td>
<td>J. J. Thomas</td>
<td>1844</td>
</tr>
<tr>
<td>Rotation versus Summer-fallowing</td>
<td>Willis Gaylord</td>
<td>1844</td>
</tr>
<tr>
<td>Science and Agriculture</td>
<td>J. J. Thomas</td>
<td>1845</td>
</tr>
<tr>
<td>Sheep, their breeds</td>
<td>H. S. Randall</td>
<td>1841</td>
</tr>
<tr>
<td>&quot; Merino and Saxon.</td>
<td>Wm. Jarvis, Vermont</td>
<td>1841</td>
</tr>
<tr>
<td>&quot; Merino and Saxon.</td>
<td>H. D. Grove</td>
<td>1841</td>
</tr>
</tbody>
</table>
Sheep, Paular Merino.  S. W. Jewett .......................... 1841
 " management of.  S. A. Morrell .......................... 1841
 " breeding.  S. W. Jewett .......................... 1841
 " most profitable.  Wightman Chapman .................. 1842
 " Saxony and Merino.  W. Chapman .................. 1844
 " management of Merino.  J. L. Randall .................. 1846
 " management of fine-wooled.  D. S. Curtis ........ 1848
 " fine-wooled.  J. L. Randall .................. 1848
Sheep and Sheep-husbandry Discussions .................. 1849
Silk Culture and Manufacture.  H. P. Byram, Kentucky .. 1845
Silk Culture.  Gideon B. Smith, Maryland .................. 1841
Silk Culture, &c.  D. Stebbins .................. 1847
Soils and their management.  David Thomas .................. 1842
Stock, food for.  E. N. Hosford .................. 1844
Swine, breeds and raising.  B. P. Johnson .................. 1841
 " feeding experiments.  J. Murray Bacon, N. Jersey .. 1847
Sub-soiling.  C. N. Bement .......................... 1842
Sub-soil Culture.  John M'Donald .................. 1844
Sub-soil ploughing.  S. M'Lean .................. 1845
 " " J. Mallory .................. 1847
Statistics of New York.  S. S. Randall .................. 1845
Soiling.  R. L. Pell .......................... 1846
 " H. A. Field .................. 1846
Salt manufacture at Salina, N. Y. .................. 1849
Survey of Washington County, fine-wooled Sheep, Sheep-
husbandry, Soils, &c.  Asa Fitch, M. D. .................. 1849
State of Agriculture in Europe.  Prof. J. F. W. Johnston .. 1849
Survey of the County of Seneca.  J. Delafield .................. 1850
Sandy Soils, their value and mode of treatment; Prize Essay.
W. C. Watson .......................... 1851
Statement of Farm-labor and its cost.  J. Delafield .................. 1851
Survey of Madison County.  G. Evans .................. 1851
Survey of Essex County.  W. C. Watson .................. 1852
Tillage, Essay on.  Willis Gaylord .................. 1841
 " Philosophy of.  Dr. D. Lee .................. 1848
Tomato, Egg-plant, &c., account of.  J. H. Salisbury .................. 1848
Trees and Shrubs for cities and towns.  D. J. Browne .................. 1846
Trial of Ploughs .................. 1850
The Regeneration of the Potato.  C. E. Goodrich .................. 1850
The Dairy .................. 1852
Water used for Irrigation at Glenthan, Scotland.  James F.
W. Johnston .......................... 1847
Wheat, Italian, Culture, &c.  Jay Hathaway .................. 1841
 " varieties of.  Rawson Harmon, Jun. .................. 1843
 " Winter killing.  Thomas Mellon .................. 1842
 " experiments on varieties of.  Rawson Harmon, Jun. 1843
Wheat, profitable cultivation of. Dr. D. Lee, and others ... 1844
" preparation of light soils for. Elias Cost ........ 1846
" experiments on. W. D. Osborne .................. 1847
" in England. J. Slocum .......................... 1848
Wheat-fly, account of. Asa Fitch .................. 1845
Wool-trade, letters on. J. B. Nott .................. 1846
Wright, Silas, Biography of, by Committee of the Society ... 1847

In addition to these Articles, the Proceedings of the County Societies, and the Reports of the Committees at the Annual and Winter Exhibitions, are full of valuable practical matter, useful to the Farmer, and of the highest interest.

Addresses. — The Addresses before the Society at their Exhibitions and Annual Meetings have been of a character calculated to advance this great interest of our country, and have been productive of much good. The following are the names of gentlemen whose Addresses have been published in the Transactions:


B. P. JOHNSON,
Corresponding Secretary.
ESSAYS.

THE HOG.

CHARACTERISTICS OF BREEDS.

BY SANFORD HOWARD, OF MASSACHUSETTS.

Geological researches have shown that the hog is one of the most ancient of mammiferous animals. His fossilized bones have been found in various places, associated with those of the mastodon, dinotherium, a gigantic species of deer, and other animals long since extinct. An able zoologist, (Martin,) observes: "Of the identity of these bones with those of the ordinary wild hog, all doubt has been removed by the rigorous comparisons." The same writer remarks: "It were useless to ask how it is that, while the mammoth and the mastodon, the ursus, the huge red-deer, (Cervus megaceros,) hyenas, enormous bears, and powerful feline animals have perished in times geologically recent, the wild hog continued its race. We cannot solve the mystery. It has escaped the fate of these animals — its cotemporaries — whatever might have been the cause of their own annihilation; and though no longer a tenant of our island, (Britain,) it is spread throughout a great portion of Europe and Asia."

The hog is not a native of America.* The South American

* Hogs are now found in a wild state in some of the West India Islands, as well as in Mexico and South America, though they are not indigenous to those quarters, but the descendants of the swine introduced by the Spaniards soon after their conquest. In 1591, the British ship, Henry May, was wrecked on Bermuda, at which time the surviving crew found the island swarming with wild black hogs, though not a single human being was then living there. In 1627, the forests in the vicinity of the plantations on James River contained wild hogs without number. The Indians hunted them down and fed upon them as freely as upon other game. — Ed.
peccary,* though of the same order, belongs to a different genus. But in the uncultivated parts of Europe, Asia, and Africa, the wild hog has existed from time immemorial; and no less than eight species are enumerated by naturalists as inhabiting those countries at the present day.

The domestic hog was evidently derived from the wild, though it can hardly be supposed that any one species of the latter has been the parent of all the domestic breeds. On the contrary, the great diversity of characters which the domesticated animal presents in different countries, is probably owing in a great degree to its affinity with various original stocks. Experiments have proved that the domestic hog is capable of breeding with different wild species, and that a prolific offspring is the result.

The subjugated animal is very different in his disposition and instincts from his untamed ancestor. The common hog is as timid and dependent as most other domestic animals. In his natural state, on the contrary, he is sagacious, bold, and independent. When of mature age, and in possession of all his faculties, he acknowledges no superior, and will not turn from his path for the proudest beast of the forest. Even the tiger and lion have found themselves unable to withstand his furious charge, and have been laid in the dust by wounds from his formidable tusks.

But the domestic hog soon regains many of the primitive habits of the race, when allowed his liberty in situations where he can satisfy his wants. The semi-wild character of the "woods-hog" of our Northern and Western States shows this. Even in his ordinary bondage he is by no means the stupid and senseless animal which some have imagined him. He frequently manifests considerable intelligence, and his intellect is capable of a degree

---

* The collared peccary, (Dycotyles torquatus,) and its congener the white-lipped species, (D. labiatus,) both inhabit the thickest and most extensive of the South American forests, resorting for shelter to hollow trees and the deserted burrows of other animals; yet they not only differ from one another in their habits, dispositions, and external forms, but from those of the common domesticated hog. Both species root up the earth in search of roots, and sometimes commit great ravages among the fields of sugar-cane, maize, manihot, potatoes, and other crops. They also devour fish, and are represented to be expert in killing reptiles, the rattlesnake not excepted.—Ed.
of development beyond what might be supposed without acquaintance with his nature. Everybody has heard of "learned pigs," (second Bacon's,) which, among other tricks, would spell out various words by arranging the letters of the alphabet. Pigs may also be encouraged to defend themselves with great effect against other animals. Not long since a "fighting-pig" was advertised, which, though only weighing fifty pounds, was offered to be matched against any dog, without regard to size. A more extraordinary instance of the education of this animal, is that of the sporting pig, described in "Daniel's Rural Sports." This animal, a black sow called "Slut," was actually broken to find and stand game, like a pointer-dog. She was of the sort of swine which run in the New Forest, so called, where they chiefly obtain their support. She was tamed by the brothers Toomer, gamekeepers to Sir Henry Mildmay. After a few weeks' trial, according to the statement, "she would retrieve birds that had run as well as the best pointers; nay, her nose was superior to the best pointer her trainers ever possessed, and no two men in England had better." She appeared to take great delight in hunting, and often went alone the distance of seven miles from the residence of one of the Toomers to the other, "as if to court being taken out shooting." She lived till she was ten years old, and was then killed, because she was suspected of having aided in the disappearance of sundry lambs. She had got fat and sluggish, and weighed 700 pounds.

The following is a brief notice of some of the breeds of domestic swine. It is only a few years since it was very common to hear an expression signifying that the breed of a hog is in the food he gets. This notion has been to a great extent eradicated, but is not yet without advocates. There are still some who do not believe there is anything in the breed, because they "cannot see how it is;" but that is no reason for denying the fact. They cannot see how it is that in the seeds of a fruit, (as of the pear, for instance,) all of which are to outward appearances just alike, and probably would appear so by the nicest chemical test—some will produce fruit the most delicious and melting, and others, with precisely the same soil and culture, that which is the most crabbed and austere. They cannot see how it is that the bear should live and cover his carcass with fat
to an amount nearly equal to half his whole weight, and which supplies his lamp of life for five months in the year, while the wolf and the fox remain gaunt and lean. They cannot see how it is that the same kind of food, when eaten by the ox, the sheep, the turkey, or the common fowl, produces meat, which, to human taste, is of very different qualities.

All these effects are obvious; yet we cannot see their causes, nor fully understand them. All we can say is, they result from the varied nature of things. They show, however, that there is in the original germ of plants and animals, a principle which produces certain peculiarities greatly affecting their value for the purposes of man. This principle is not only manifested in the characteristics of different species, but exists more or less in varieties of the same species. We see its effects in the different kinds of wheat, and in other species of grain—in varieties of peas, beans, apples, potatoes, &c.,—and in the peculiarities of the different varieties of the dog, the sheep, the hog, and other domestic animals. It is man's business to study these peculiarities, and secure and apply them in those ways which will render them most subservient to his wants.

In regard to swine, it is to be regretted that the differences in the various breeds have not been demonstrated by exact experiments. We are, however, in possession of certain facts of great importance in the case. For instance, many farmers have found that on the same amount and kind of food, some hogs will gain much faster than others; that some will become fat on uncooked vegetable food, as raw apples, while others require grain or meal to bring them to a slaughtering condition; that some will keep in good order, and will thrive on clover or grass only, while others can scarcely live on such fare; that in some, the tendency to fatten is so great, that it is necessary to keep them on very low diet to insure their breeding.

There is not only a difference in the amount of meat which different swine are capable of acquiring from an equal amount of food, but there is a great difference in the quality of the meat. Some persons, doubting this, may say, "pork is pork;" so "beef is beef;" but is there not a great difference in the texture and flavor of beef from cattle of different breeds? This difference is so well understood in England, that the prices of
beef are to a considerable extent regulated by the breed—the West-Highlanders and Galloways taking the first rank, then the Herefords and Devons, and last, the Shorthorns. A similar scale of prices regulates the market in reference to mutton from various breeds of sheep. The difference in the meat of swine is not less striking. Some have a thick skin, with flesh of an open, coarse texture, and unpleasant flavor; others a thin skin, with fine-grained, well-flavored flesh. Some convert their food almost wholly into fat, while in others it enters chiefly into the composition of muscle. In some, the fat is accumulated chiefly on the belly, and is of a soft, oily nature; in others, it is laid more on the back, and is comparatively firm and hard.

Of course, the breed should be chosen with reference to the purposes in view. If lard-oil is the principal object, the animal which will give the greatest quantity of soft fat for the food consumed will be most profitable. For barrelling, "clear pork" is the main object; and the animal which will give the greatest quantity of solid fat on the back and sides, is preferable. This is the description of pork which is chiefly consumed in the Eastern States and in the fisheries. In the Southern and Western States, pork is used chiefly in the form of "bacon"—the whole of the meat is "dry-cured" and smoked. Where this is the object, the clear fat which is so much prized in other cases, is not desirable; but a carcass which gives a considerable proportion of lean with the fat is much better.

The swine of the United States have been derived chiefly from Great Britain, though occasional importations have been made from other countries. The British stock of the present day consists of various mixtures of the aboriginal race of that island with various Asiatic stocks—mostly Chinese and Siamese. Youatt, in his treatise, published in 1846, observed that the old breeds were "rapidly losing all traces of individuality under the various systems of crossing to which they are subjected." The old stock, which, "with trifling degrees of difference," it is said, "was spread over the greater part of England," is described by Martin as "large, coarse, unthrifty, with a long broad snout, large flapping ears, low in the shoulders, long in the back, flat-sided, long in the limbs, and large-boned, with a thick hide covered with coarse bristles. They were enormous feeders but
slow fatteners; consuming more food than was repaid by their flesh." But he observes that the "general system of crossing now pursued tends to the establishment of a uniform race throughout every county; that is, a race presenting the same outstanding characteristics."

Before proceeding to notice the various breeds of swine, it may be observed that the general wants of the community in relation to pork, can be best supplied by two descriptions or classes of hogs; one for supplying the market with meat to be eaten fresh, and for baconing, as above-mentioned, and the other for making fat pork for barrelling, &c. This classification will therefore be adopted in the remarks which follow. Those breeds whose special characteristic is the formation of fat, will be first considered. And, as having been the principal stock in changing the character of the Old English, we will notice first of all, The Chinese.—There are doubtless various breeds of swine in the "Celestial Empire." Specimens brought from that country, frequently present so marked a contrast of character that no one would hesitate to pronounce them of different breeds. They vary in size and in color, ranging from white to black. Some of the early importations made to England, and thence to this country, were black; and the idea appears to have been held that this was the invariable color of Chinese swine. Hence Culley, who wrote in the year 1784, speaks of them as "the Chinese or black breed." Youatt makes two distinct varieties of the Chinese, the "white" and the "black."* The race, however, in all its varieties, possesses the common characteristic of fattening easily. They are small-boned, and acquire great weights in proportion to the bone and offal. Those brought from their native country seldom have that perfection of symmetry which is most esteemed in animals of this kind, and which the cross-breed descendants soon acquire by skilful breeding. The pure Chinese fatten too much on the belly and too little on the back,

* It may not generally be known that the progeny of the white hogs transported from Europe and the United States into the tropical regions of Africa and America are usually black, and continue of that color through successive generations. How far this will explain the differences in the color of the Chinese hogs, a series of physiological inquiries can only determine.—Ed.
and the fat is inclined to be soft and oily. Youatt says, "they do not make good bacon, and are often too fat and oily to be generally esteemed as pork." The females are sometimes singularly prolific. The improvement which has been effected by means of the Chinese race, has resulted in the first place from lessening the bone and increasing the aptitude to fatten in the stocks with which they have been crossed, and afterwards selecting as a breeding stock such as possessed the requisite points as to symmetry.

The Improved Suffolk.—This breed is one of the most highly esteemed and valuable in the world. Its origin, according to Youatt and Martin, is the old Suffolk crossed with the Berkshire and Chinese. Youatt says, "those arising from the Berkshire and Suffolk are not so well shaped as those arising from the Chinese and Suffolk; being coarser, longer-legged, and more prominent about the hips." He concludes: "On the whole, there are but few better breeds in the kingdom than the Improved Suffolk." He states that the greater part of the pigs at Prince Albert's farm, near Windsor, are of this breed. Martin says, "this breed stands first," and he describes the animals as "rather small, but compact, short-legged, and small-headed; the body is round, and they fatten readily." Rham, in his "Dictionary of the Farm," says, "Suffolk pigs are perhaps, on the whole, the most popular of any breed in England."

For the introduction of the Improved Suffolk pigs into this country, we are indebted to the late William Stickney, of Boston. He made several importations, comprising some of the best specimens of the breed to be had in England, from 1842 to 1848. He also imported specimens of the Middlesex and of the White Essex breeds. Since these importations, there have been others, and the stock is now bred to a considerable extent in New England, and is rapidly spreading over the country.

The Suffolks, as before stated, are not large hogs, but attain maturity at an early age, and may be always in condition to kill from the time they are a month old. They readily weigh from 200 to 300 pounds at six to ten months old, and a proportionate weight at twelve months. The pork is so much esteemed, that it generally commands from a cent to two cents a pound, extra, in Boston Market.
The Middlesex.—This appears to be a popular breed in parts of England, and has sometimes carried prizes at the shows of the Smithfield Club. It has been previously stated that Mr. Stickney imported Middlesex pigs into this country. He received a lot in 1844, and another lot in 1848. The breed is evidently derived from a large infusion of the Chinese with some larger stock. Our remarks refer to those introduced here. The color is usually white. The size of the animals is perhaps somewhat larger than the Suffolks, but the carcass is less symmetrical; the frame is more loose, the legs less straight, the knees apt to be turned in, the belly is more hanging, and the general appearance indicating a softer texture of flesh. They fatten easily. They have often been crossed with the Suffolk, but with no advantage to the latter, so far as the writer has seen. The late Mr. Stickney continued the stock unmixed for several years; but it is not known to be so bred by any one in this country at the present time.

The Lincolnshire Breed was formerly in considerable repute. They were large, reaching the weight of 450 to 520 pounds at a year and a half old, and 700 pounds at two years, according to Youatt. An intermixture with the Chinese has produced a smaller stock, maturing at an earlier age. Both kinds have been occasionally introduced into this country. The larger sort was bred in the neighborhood of New York a few years since.

A variety called the Chester County Hog, bearing considerable resemblance to the large Lincolnshire, and probably derived from that and some other coarse stock, is met with in various parts of Pennsylvania.

The Leicestershire Breed was derived from the stock of the celebrated breeder of the last century, Robert Bakewell. They are white, and of rather large size. They have been considerably bred in this country, but are not so popular as formerly. The breed has degenerated, and the animals are often defective in form—long and crooked in the back, giving less weight for the food consumed than some others.

The Dutchess County Hog is said to have been derived from a cross of the Leicesteer and Berkshire.

The Mackay Breed, formerly well known in Massachusetts, was originated by the late Captain John Mackay, of Boston.
He had a farm at Weston, in Middlesex county, on which he collected many hogs which he procured in various parts of the world, whither he was led in his commercial intercourse. Those various kinds were bred together, and the result was the production of a stock to which his name was applied. The writer of this article purchased pigs of Captain Mackay at various times—first in 1830. It can hardly be said that his stock ever acquired a sufficiently uniform character to justify its being called a distinct breed. Their greatly diverse origin was always more or less manifest. They were, however, very easily fattened and highly profitable. Some inclined to grow to a large size, yet were always fat, from three weeks old, if tolerably cared for; and at eighteen months old sometimes weighed 600 pounds each, and upwards. In the latter part of his breeding, Captain Mackay gave his attention more to the propagation of this larger stock. In 1834, he sold all his swine to Colonel Jaques, of the Ten-Hills Farm, who now has all of this valuable stock within the writer's knowledge. Various circumstances, which it is unnecessary to mention here, have conspired to nearly annihilate them. Colonel Jaques has made extensive inquiries, but can hear of none except those in his own hands.

The Bedford or Woburn Breed originated at Woburn, the estate of the Duke of Bedford. It was a valuable breed, and was widely disseminated. Various importations were made to this country—some under different names. The first were sent as a present to General Washington by the Duke of Bedford, about the year 1792. Some of the descendants of this importation were subsequently introduced into Massachusetts by Colonel Timothy Pickering, who was Secretary of State under a portion of Washington's administration. The same stock was bred in great perfection for several years by the late Dr. O. Fiske, of Worcester. The writer had personal experience with the breed from this and other stocks. But the last remnant of this famed Bedford breed, in this part of the country, is believed to have been merged in what has been called the "Hospital Breed," which is understood to have been formed by crossing stock obtained from Dr. Fiske with the Mackay and Leicester. Some of the peculiar points of the Bedford are still sometimes seen in the Hospital stock.
The Byfield or Newbury White Breed originated, or first became noted, about forty years since, on the farm of the late Gorham Parsons, Esq., in Newburgh, in this State. It was said to have sprung from a cross with some pigs brought from Africa, which had a great tendency to fatten.* No vestige of it has been seen for some years, except in diluted crosses. What was called the "Grass Breed," was probably derived from some mixture with the Byfield.

The foregoing list comprises most of the breeds which have been regarded as best adapted to the production of "clear pork." Other breeds, which form a greater proportion of lean properly combined with fat, may be more profitable for particular situations. In cities and large towns a great quantity of pork is consumed in a fresh state. To be best adapted to this purpose, swine should be small-boned, only moderately fat, but plump and meaty, weighing when dressed from forty to a hundred pounds — the flesh fine-grained, and of the best quality as to flavor. Under this class, and as adapted to baconing, as before described, may be enumerated the following:

The Neapolitan Breed. — Martin, speaking of the excellence of Italian swine, observes: "The ancient Romans made the art of breeding, rearing and fattening pigs a study, and elevated, so to speak, various strains to the highest perfection. We cannot doubt that from those improved races of antiquity the present pigs of Italy have descended. It is not, we think, over-straining the mark, to regard the excellent breeds of pigs in Italy as the descendants of a long line of ancestry — of breeds established before Rome fell." The Neapolitan is the most celebrated Italian breed, and has been the source from whence some of the most esteemed English breeds have been in part derived. They have also been introduced into the United States, but did

* After the above was written, the following note was received from Colonel Jaques: — "Some forty years since, while on a visit to the late Gorham Parsons's farm, in Byfield, Mr. Parsons introduced me to a neighbor of his by the name of Colman, as being the person who first produced and bred the variety of swine called the Byfield Breed. I think Mr. Colman mentioned something about having first obtained a Chinese pig. Such are the facts according to my recollection. I may find in my diary something more on the subject."
not prove sufficiently hardy for ordinary management. Their flesh is of very superior quality. Martin's description of the breed is as follows:—"The Neapolitan pig is small, black, almost destitute of bristles, and remarkable for aptitude to fatten; it is short in the snout, small in the bone, with sharp erect ears; but it is by no means hardy, at least in our country, and if the sows happen to have litters in winter, it will be difficult, should the weather be severe, to save the young pigs from dying. But as a cross with some of our breeds, as the Berkshire, the Neapolitan race is most valuable. The cross-breed exhibits improvement in form without too great delicacy of constitution; they have a remarkable tendency to fatten, and though larger and stronger than the Neapolitan, display all their good qualities. The Essex breed is much indebted for its excellencies to the Neapolitan intermixture."

The Improved Essex.—This is one of the most valuable breeds now known. Its establishment is generally credited to the late Lord Western. It has of later years been extensively known in the hands of W. Fisher Hobbs, of Mark's Hall, Essex. It has, perhaps, carried more prizes at the shows of the Smithfield Club within the last ten years, than any other breed. As above-mentioned, it was derived from a cross with the Neapolitan, and inherits the color of that race, with more size, finer symmetry, and much better constitution. Stephens, author of the "Book of the Farm," and the "Farmer's Guide," says: "As to the breed which shows the greatest disposition to fatten, together with a due proportion of lean, I never saw one equal to that which was originated by Lord Western, in Essex. They were exceedingly gentle, indisposed to travel far, not very prolific, however, but could attain, if kept on, to a great weight, and so compact in form and small of bone and offal, that they invariably yielded a greater weight of pork than was judged of before being slaughtered. The offal was small, and more delicious ham was never cured than they afforded." Martin says, "these animals fatten quickly, grow rapidly, and yield very superior meat. The hogs when fattened will sometimes weigh 26 or 28 stones, (14 lbs.,) often 18 or 20," equal to 252 to 392 pounds.

Colonel Lewis G. Morris, of Fordham, Westchester county, New York, has made several importations of this breed, some
specimens of which were purchased of W. Fisher Hobbs, and were of that gentleman's best stock.

There is a white, or nearly white variety of the Essex, some specimens of which were imported by the late Mr. Stickney.

The Berkshire Breed.—The old Berkshire was a hog of nearly the largest class. He is described as having been mostly black, with a large frame, and large pendent ears. Martin says, "they were often found to weigh from 100 to 110 or 120 stones, of 8 pounds to the stone." Culley mentions one which, in 1774, "weighed, alive, 12 cwt. 2 qrs. 10 lbs., and when killed and dressed, weighed 10 cwt. 3 qrs. and 11 lbs. avoirdupois."

The modern breed is the result of various mixtures of the old with smaller breeds. Youatt says the old Berkshire has been crossed with the Siamese, Chinese, and Neapolitan—a statement which is corroborated by others. It was for a while a very popular breed in this country. Many of our people have reason to remember the "Berkshire fever"—some for the money they gained, and others for the money they lost by it. During the excitement in regard to the breed, it was represented by speculators as far more valuable than any other, and specimens were sometimes sold as high as $200 to $300 a head. But their popularity soon declined, and from the height to which they had been raised in general estimation, they quickly went down to the opposite extreme. The causes of this reversion of public opinion were various. One, and not the least important, was the exaggerated representations which their advocates made of their merits. This produced a reaction. People did not find them to come up to the false standard which enthusiasts or sharpers had made, and being disappointed in this, refused to see or acknowledge the true value which actually belonged to the breed. Another cause of their decline was the character of their meat. The Berkshire, in all its phases, is a lean-meated hog. Hence the pork was not adapted to barrelling—the carcass lacked the clear, unmixed fat, which the packers wanted.

But it may be supposed the pork was well adapted to the fresh-meat market, and to the mode of curing practised at the South, before spoken of. This was the case to a certain extent. Some of the Berkshires were well suited to these purposes. The breed, however, varied greatly in character. They were large
or small, according as the old Berkshire or the breeds with which they had been crossed, predominated. The large, lop-eared ones, which sometimes weighed 600 or 700 pounds dressed, were often coarse-fleshed, and not liked on that account. The very smallest, partaking most of the Siamese characters, had a lack of constitution, and were not prolific, but their flesh was fine and good; and the medium-sized ones, weighing 300 to 350 pounds at fourteen to eighteen months, were in every respect useful animals for these purposes. Another reason why the Berkshires did not succeed at the South was, that they appeared in many instances not well adapted to the climate, and became unhealthy there.

Judging the Berkshires as they have appeared in this country, they are less uniform in their characters than many other breeds—a point which is of great importance with persons who wish to breed swine for a particular object, as it is only those animals which possess certain qualities that are best adapted to any specified purpose.

_The Hampshire Breed._—Hampshire bacon has long been regarded in England as of superior quality, and this is thought to be due in a great degree to the breed of the animals from which it is produced. Richardson says, "this breed is not unfrequently confounded with the Berkshire, but its body is longer and its sides flatter; the head is long and the snout sharp. The color of this breed is usually dark-spotted, but is sometimes black altogether, and sometimes white." Martin says: "He who travels through Hampshire, and looks into the farm-yards, will see excellent hogs, generally black, and middle-sized, with rather a long snout, but compactly made; they are a modification of the old large-sized Hampshire stock, individuals of which in former days were of huge magnitude—and some carried about for show. This colossal breed is now seldom to be seen, but it had its good points. When fattened, (and time and much food were required to effect this,) it returned by way of repayment a weighty carcass. As in all cases, however, the question comes in—was it profitable—was the repayment for food and time in a just ratio? The answer must be, quick fattening, even with a smaller carcass, a gain of time and of provision being included, is one of the points in which the farmer finds himself best remunerated. Slow feeders, however weighty their carcass at last,
will not be found profitable when all expenses are calculated. The present Hampshire hog is compounded of the old race, and the Essex, the Chinese, and the Neapolitan, with an admixture also of the improved Berkshire."

This breed was introduced several years since into Canada, but it is doubtful if any are now bred in America.

In the foregoing history and description of breeds, the writer has been somewhat particular, as much misapprehension prevails on the subject. It appears not to be generally known that several of those noticed are extinct, and others nearly so; and the inquiry which has latterly risen for animals of these breeds may have occasioned the practice of deception.

Points of a good Hog.—The points which indicate the fattening tendency in a hog, are, the head small, with short snout and dished face; the ear small and thin, (the erect ear generally denotes affinity with the Asiatic race, and the pendent ear, a corresponding connection with the Old English,) the neck short and thick; the chest broad and capacious;* the ribs round; the back straight; the loin broad; the rump long from hips backward; the legs straight and tolerably small; the skin soft and smooth, with thin, fine bristles.

It should be borne in mind, however, that all these points do not indicate an animal best adapted to every situation. The thin skin and absence of bristles, though favorable to the accumulation of fat, when the animal is well sheltered and protected, do not denote the hardiness which may be necessary under exposure. If the animal is destined to support himself in a considerable degree, under the various transitions of weather, instead of the thin hide and scanty bristles of the refined varieties, he must be clad in covering which will afford the requisite protection against the elements, and the tendency to fatten must, to a certain extent, give way to a habit of activity and a tendency to muscular fibre. Even in ordinary farm-management, there may be too much regard paid to the points which denote a tendency to fat only, to the neglect of those which denote consti-

* The writer is aware that Liebig and some others have held that small chests were most favorable to the fattening tendency, but common observation does not support the idea.
tution. A proper balance of these must be kept constantly in view, or the stock which will be found most profitable cannot be bred.

-----------------------------

THE CULTIVATION OF LIQUORICE.

BY D. J. BROWNE.

That the spirit of agricultural improvement is fully awake in this country there is no doubt, and its progress has been far more rapid within the last ten years than in any preceding period. Excited by the laudable example of the Old World, new Agricultural Societies have annually started up in numerous sections of the Union, and encouragement has been held out by these patriotic associations, which have been headed, for the most part, by intelligent and liberal-minded men, endowed with a real knowledge of rural affairs, whose attention has generally been directed to objects of practical utility. Prudently avoiding all uncertain or fanciful theories, and adhering to such only as have been confirmed by the sanction of actual experience, their endeavors have been attended with signal success, and such a forcible appeal has been made to the common sense of the country as the rude voice of prejudice itself will be unable to confound. Yet, if a more enterprising spirit prevailed in our husbandry, in augmenting the number and the value of useful productions, we would no longer allow one system of industry to be promoted at the experience of another, and the ties of interest, which bind the extremities of our country, would thereby be cemented in indissoluble union. And how can these ties be more effectually strengthened than by the cultivation of Liquorice in the Southern States, Madder in the Western, and Venetian Sumach in the Eastern and Middle States? Large quantities of each of these substances are annually imported into the United States for the purpose of being employed in medicine or in the arts, all of which, by judicious enterprise, could readily be obtained by home production, and consequently would add thus much to our national wealth. The amount of liquorice annually imported into this country is believed to exceed $250,000, and the demand has increased in
proportion to the increase of our population, the establishment of new manufactures, and the multiplied uses which they have called forth.

Paper has recently been manufactured in France from liquorice-root, which is stated to be very white, and does not require any size in its preparation, while it can be manufactured at a price much lower than that made from rags. If this statement be true, the subject is one of considerable importance, and is highly worthy of trial by the planters of the South.

The cultivation of Common Liquorice, (Glycyrrhiza glabra,) early attracted the attention of the colonists of Georgia and Carolina, and it was ascertained that the soil and climate were favorable to its growth; but, owing to the numerous other branches of industry, and an insufficient demand for this root, its culture never was much encouraged.

This plant is a tender perennial, with roots extending very deep into the ground, and creeping to a considerable distance. When full-grown, they are as thick as the thumb, round, slender, flexible, and furnished with a few scattered rootlets; of a yellowish color externally, succulent and fibrous within. From the root proceed three or four erect, herbaceous, pale-green stems, four feet and upwards in height, garnished by alternate, pinnated leaves, having yellowish-green leaflets, clammy on their under sides. The flowers are small, papilionaceous, of a bluish or purplish color, and are succeeded by oblong, smooth, compressed, pointed, and one-celled legumes, containing two or three small kidney-shaped seeds.

The soil should consist of a moist, loose, sandy loam, or the black mould of the alluvial or bottom-lands, situated near our southern lakes and streams. In short, the fresher, newer, and richer the ground, the better for the plantation; and if not sufficiently rich, it should be made so by adding a due quantity of rotten stable-dung, mixed with plaster or charcoal, and wood-ashes or lime, in order to rot it the more, till deprived of its fermentative heat, which would otherwise injure the runners or sets. The ground should be sub-soiled or trenched three or four feet deep, and, if sufficiently rich, thrown into three-and-a-half-foot beds, including the alleys, in the centres of which the sets are to be planted early in March, at intervals of eighteen inches
apart; but if the ground is not sufficiently rich, trenches must be dug throughout the field three and a half feet apart, from centre to centre, wide enough, at least, for a man conveniently to work in, and three or four feet deep. When one trench is dug, it must be filled with the earth from the next, well incorporated with the dung or compost, and alleys made seven or eight inches deep midway between the trenches, the earth being spread over them, so as to form raised beds throughout the plantation.

In the next place, the runners, or sets, are to be provided, which consist of those sprouts that proceed from the thick ends of the roots, or crowns, of the plants, usually lying about two inches below the surface, and are three or four feet in length. These small running roots are to be cut into five or six-inch pieces, with two or three eyes, or joints, to each piece. Another kind of sets consists of the tops, or crown-buds, which are cut from the liquorice-roots at the time of harvesting. When the sets are in readiness, dibble holes along the centres of the beds, eighteen inches apart, and seven or eight inches deep, into each of which thrust a piece of root, with the small end downward, covering it entirely with mould. If crown-buds are used, they may be treated in the same manner, with the exception of dibbling the holes less deeply. During spring and summer, all weeds must be kept down by the hoe, care being taken not to cut off the top shoots of the plant, as it would greatly injure them. In the autumn, when the stems of the liquorice are in a decaying state, they should be cut down, and a light dressing of rotten dung spread upon the surface. The following spring, say early in March, the ground should be slightly dug between the rows, burying the last dressing of dung, care being observed not to cut, or otherwise injure the roots. During the second and third summers, the field must also be kept free from weeds by occasional hoeings.

At the end of three years after planting, the roots will be fit to take up. The proper season for this is from November till February; for they should neither be taken up before the stalks are fully decayed, nor deferred till late in the spring; otherwise they would be apt to shrivel and diminish in weight. Begin by digging at one end of the rows, and continue on to the other, in
order to take up all the roots. When they are collected, the large roots are to be separated from the small side-shoots, which must be trimmed off and divided into proper lengths, and, with the crown-buds, preserved for fresh sets. The former may be stored in dry sand, in a cellar—first a layer of sets, and then a layer of sand. The crown-buds will keep if laid in a heap and covered with dry sand.

The sooner liquorice is sold, the heavier it weighs; and the greener it is, the more virtue it contains. It is sold in three distinct forms, namely, in the roots, in powder, and in its inspissated juice. The first of these needs no explanation. The second is prepared by cutting the small roots into small pieces, drying them in an oven or kiln, and grinding them in a mill. The third kind is prepared by pounding the smaller roots and fragments with cold water, for nearly two days, after which the pulp is to be squeezed, and the juice boiled down, in an iron pot, to a pitchy consistence, and then rolled or stamped into sticks or cakes, which are sometimes sold under the name of "Spanish liquorice."

An acre of ground has sometimes produced from 4,000 to 5,000 pounds of liquorice, valued at $400 to $500.

The common liquorice is a native of the south of Europe, but is principally cultivated as an article of commerce in France, Spain, Italy, Sicily, and other islands in the Mediterranean. It was formerly grown to a considerable extent at Pontefract, Yorkshire, in England, Worksop, in Nottinghamshire, and Godalming, in Surry; but a greater part of what is now used in England is grown at Mitcham, Battersea, Fulham, and other places near London.

Liquorice-roots will keep a year, if laid in sand and stored in a cool dry cellar; and if the sets, or runners and buds, are cut ready for planting, tied in bundles, and sent by land-carriage, they will keep a fortnight. If packed in sand, and sent by water, they will keep sound three or four months, especially the more hardy buds.
MANAGEMENT OF THE HONEY-BEE.

BY REV. L. L. LANGSTROTH.

From the proof-sheets of a forthcoming work on the Bee, by Rev. Mr. Langstroth, we make the following extracts: —

The present condition of practical bee-keeping in this country, is known to be deplorably low. From the great mass of agriculturists, and others favorably situated for obtaining honey, it receives not the slightest attention. Notwithstanding the large number of patent hives which have been introduced, the ravages of the bee-moth have increased, and success is becoming more and more precarious. Multitudes have abandoned the pursuit in disgust, while many of the most experienced are fast settling down into the conviction that all the so-called "Improved Hives" are delusions, and that they must return to the simple box or hollow log, and take up their bees with sulphur, in the old-fashioned way.

In the present state of public opinion, it requires no little courage to venture upon the introduction of a new hive and system of management; but I feel confident that a new era in bee-keeping has arrived, and invite the attention of all interested to the reasons for this belief. A perusal of this Manual will, I trust, convince them that there is a better way than any with which they have yet been acquainted. They will here find many hitherto mysterious points in the physiology of the honey-bee clearly explained, and much valuable information never before communicated to the public.

It is now nearly fifteen years since I first turned my attention to the cultivation of bees: The state of my health having compelled me to live more and more in the open air, I have devoted a large portion of my time, of late years, to a careful investigation of their habits, and to a series of minute and thorough experiments in the construction of hives, and the best methods of managing them, so as to secure the largest practical results.
Very early in my apiarian studies, I procured an imported copy of the work of the celebrated Huber, and constructed a hive on his plan, which furnished me with favorable opportunities of verifying some of his most valuable discoveries; and I soon found that the prejudices existing against him were entirely unfounded. Believing that his discoveries laid the foundation for a more extended and profitable system of bee-keeping, I began to experiment with hives of various construction.

The result of all these investigations fell far short of my expectations. I became, however, most thoroughly convinced that no hives were fit to be used, unless they furnished uncommon protection against extremes of heat, and more especially of cold. I accordingly discarded all thin hives made of inch stuff, and constructed my hives of doubled materials, enclosing a "dead-air" space all around.

These hives, although more expensive in the first cost, proved to be much cheaper in the end than those I had previously used. The bees wintered remarkably well in them, and swarmed early and with unusual regularity. My next step in advance was, while I secured my surplus honey in the most convenient, beautiful, and salable forms, so to facilitate the entrance of the bees into the honey receptacles, as to secure the largest fruits from their labors.

Although I felt confident that my hive possessed some valuable peculiarities, I still found myself unable to remedy many of the casualties to which bee-keeping is liable. I now perceived that no hive could be made to answer my expectations unless it gave me the complete control of the combs, so that I might remove any or all of them at pleasure. The use of the Huber hive had convinced me that, with proper precautions, the combs might be removed without enlarging the bees, and that these insects were capable of being domesticated or tamed, to a most surprising degree. A knowledge of these facts was absolutely necessary to the further progress of my invention; for without it, I should have regarded a hive designed to allow of the removal of the combs as too dangerous in use to be of any practical value. At first, I used movable slats or bars placed on rabbets in the front and back of the hive. The bees were induced to build their combs upon these bars, and in carrying them down, to fasten
them to the sides of the hive. By severing the attachments to the sides, I was able, at any time, to remove the combs suspended from the bars. There was nothing new in the use of movable bars, the invention being probably at least a hundred years old; and I had myself used such hives on Bevan's plan very early in the commencement of my experiments. The chief peculiarity in my hives, as now constructed, was the facility with which these bars could be removed without enraging the bees, and their combination with my new mode of obtaining the surplus honey.

With hives of this construction, I commenced experimenting on a larger scale than ever, and soon arrived at results which proved to be of the very first importance. I found myself able, if I wished it, to dispense entirely with natural swarming, and yet to multiply colonies with much greater rapidity and certainty than by the common methods. I could, in a short time, strengthen my feeble colonies, and furnish those which had lost their queen with the means of obtaining another. If I suspected that anything was the matter with a hive, I could ascertain its true condition, by making a thorough examination of every part, and if the worms had gained a lodgment, I could quickly dispossess them. In short, I could perform all the operations which will be explained in this treatise, and I now believed that bee-keeping could be made highly profitable, and as much a matter of certainty, as any other branch of rural economy.

I perceived, however, that one thing was yet wanting. The cutting of the combs from their attachments to the sides of the hive, in order to remove them, was attended with much loss of time to myself and to the bees, and in order to facilitate this operation, the construction of my hive was necessarily complicated. This led me to invent a method by which the combs were attached to movable frames, and suspended in the hives, so as to touch neither the top, bottom, nor sides. By this device, I was able to remove the combs at pleasure, and if desired, I could speedily transfer them, bees and all, without any cutting, to another hive. I have experimented largely with hives of this construction, and find that they answer most admirably all the ends proposed in their invention.

While experimenting in the summer of 1851, with some observing hives of a peculiar construction, I discovered that bees
could be made to work in glass hives, exposed to the full light of day. The notice, in a Philadelphia newspaper, of this discovery, procured me the pleasure of an acquaintance with Rev. Dr. Berg, Pastor of a Dutch Reformed church in that city. From him I first learned that a Prussian clergyman, of the name of Dzierzon, (pronounced Tseertson,) had attracted the attention of crowned heads, by his important discoveries in the management of bees. Before he communicated the particulars of these discoveries, I explained to Dr. Berg my system of management, and showed him my hive. He expressed the greatest astonishment at the wonderful similarity in our methods of management, both of us having carried on our investigations without the slightest knowledge of each other's labors. Our hives he found to differ in some very important respects. In the Dzierzon hive, the combs are not attached to movable frames, but to bars, so that they cannot, without cutting, be removed from the hive. In my hive, which is opened from the top, any comb may be taken out, without at all disturbing the others; whereas, in the Dzierzon hive, which is opened from one of the ends, it is often necessary to cut and remove many combs, in order to get access to a particular one; thus, if the tenth comb from the end is to be removed, nine combs must be first cut and taken out. All this consumes a large amount of time. The German hive does not furnish the surplus honey in a form which would be found most salable in our markets, or which would admit of safe transportation in the comb. Notwithstanding these disadvantages, it has achieved a great triumph in Germany, and given a new impulse to the cultivation of bees.

The following letter from Samuel Wagner, Esq., Cashier of the Bank in York, Pennsylvania, will show the results which have been obtained in Germany, by the new system of management, and his estimate of the superior value of my hive to those in use there.

York, Pa., Dec. 24, 1852.

Dear Sir,—The Dzierzon theory and the system of bee-management based thereon, were originally promulgated, hypothetically, in the "Eichstadt Bienen-zeitung" or Bee-journal, in 1845, and at once arrested my attention. Subsequently, when in 1848, at the instance of the Prussian government, the Rev.
Mr. Dzierzon published his "Theory and Practice of Bee-Culture," I imported a copy, which reached me in 1849, and which I translated prior to January, 1850. Before the translation was completed, I received a visit from my friend, the Rev. Dr. Berg, of Philadelphia, and in the course of conversation on bee-keeping, mentioned to him the Dzierzon theory and system, as one which I regarded as new and very superior, though I had had no opportunity for testing it practically. In February following, when in Philadelphia, I left with him the translation in manuscript—up to which period I doubt whether any other person in this country had any knowledge of the Dzierzon theory; except to Dr. Berg I had never mentioned it to any one, save in very general terms.

In September, 1851, Dr. Berg again visited York, and stated to me your investigations, discoveries, and inventions. From the account Dr. Berg gave me, I felt assured that you had devised substantially the same system as that so successfully pursued by Mr. Dzierzon; but how far your hive resembled his I was unable to judge from description alone. I inferred, however, several points of difference. The coincidence as to system, and the principles on which it was evidently founded, struck me as exceedingly singular and interesting, because I felt confident that you had no more knowledge of Mr. Dzierzon and his labors, before Dr. Berg mentioned him and his book to you, than Mr. Dzierzon had of you. These circumstances made me very anxious to examine your hives, and induced me to visit your apiary in the village of West Philadelphia last August. In the absence of the keeper, as I informed you, I took the liberty to explore the premises thoroughly, opening and inspecting a number of the hives, and noticing the internal arrangement of the parts. The result was, that I came away convinced that though your system was based on the same principles as Dzierzon's, yet that your hive was almost totally different from his, in construction and arrangement; that while the same objects substantially are attained by each, your hive is more simple, more convenient, and much better adapted for general introduction and use, since the mode of using it can be more easily taught. Of its ultimate and triumphant success I have no doubt. I sincerely believe that when it comes under the notice of Mr. Dzierzon, he will
himself prefer it to his own. It in fact combines all the good properties which a hive ought to possess, while it is free from the complication, clumsiness, vain whims, and decidedly objectionable features, which characterize most of the inventions which profess to be at all superior to the simple box, or the common chamber hive.

You may certainly claim equal credit with Dzierzon for originality in observation and discovery in the natural history of the honey-bee, and for success in deducing principles and devising a most valuable system of management from observed facts. But in invention, as far as neatness, compactness, and adaptation of means to ends are concerned, the sturdy German must yield the palm to you. You will find a case of similar coincidence detailed in the Westminster Review for October, 1852, page 267, et seq.

I send you herewith some interesting statements respecting Dzierzon, and the estimate in which his system is held in Germany.

Very truly yours,

SAMUEL WAGNER.

Rev. L. L. Langstroth.

The following are the statements to which Mr. Wagner refers:

"As the best test of the value of Mr. Dzierzon’s system is the results which have been made to flow from it, a brief account of its rise and progress may be found interesting. In 1835, he commenced bee-keeping in the common way, with 12 colonies—and after various mishaps, which taught him the defects of the common hives and the old mode of management, his stock was so reduced that in 1838 he had virtually to begin anew. At this period he contrived his improved hive in its ruder form, which gave him the command over all the combs, and he began to experiment on the theory which observation and study had enabled him to devise. Thenceforward his progress was as rapid as his success was complete and triumphant. Though he met with frequent reverses—about 70 colonies having been stolen from him, 60 destroyed by fire, and 24 by a flood—yet in 1846 his stock had increased to 360 colonies, and he realized from them that year six thousand pounds of honey, besides several
hundred weight of wax. At the same time, most of the cultivators in his vicinity, who pursued the common methods, had fewer hives than they had when he commenced.

"In the year 1848, a fatal pestilence, known by the name of 'foul brood,' prevailed among his bees, and destroyed nearly all his colonies before it could be subdued — only about ten having escaped the malady, which attacked alike the old stocks and his artificial swarms. He estimates his entire loss that year at over 500 colonies. Nevertheless he succeeded so well in multiplying by artificial swarms the few that remained healthy, that in the fall of 1851 his stock consisted of nearly 400 colonies. He must, therefore, have multiplied his stocks more than three-fold each year.

"The highly prosperous condition of his colonies is attested by the Report of the Secretary of the Annual Apiarian Convention which met in his vicinity last spring. This Convention, the fourth which has been held, consisted of 112 experienced and enthusiastic bee-keepers from various districts of Germany and neighboring countries, and among them were some who, when they assembled, were strong opposers of his system.

"They visited and personally examined the apiaries of Mr. Dzierzon. The report speaks in the very highest terms of his success, and of the manifest superiority of his system of management. He exhibited and satisfactorily explained to his visitors his practice and principles; and they remarked, with astonishment, the singular docility of his bees, and the thorough control to which they were subjected. After a full detail of the proceedings, the Secretary goes on to say:

"Now that I have seen Dzierzon's method practically demonstrated, I must admit that it is attended with fewer difficulties than I had supposed. With his hive and system of management it would seem that bees become at once more docile than they are in other cases. I consider his system the simplest and best means of elevating bee-culture to a profitable pursuit, and of spreading it far and wide over the land—especially as it is peculiarly adapted to districts in which the bees do not readily and regularly swarm. His eminent success in re-establishing his stock after suffering so heavily from the devastating pestilence—in short, the recuperative power of the system demonstrates con-
clusively that it furnishes the best, perhaps the only means of reinstating bee-culture to a profitable branch of rural economy.

"Dzierzon modestly disclaimed the idea of having attained perfection in his hive. He dwelt rather upon the truth and importance of his theory and system of management."

"Bee-culture is no longer regarded as of any importance in rural economy." — Leipzig Illust. Alm. — Rep. on Agric. for 1846.

From the same for 1851 and 1853. "Since Dzierzon's system has been made known, an entire revolution in bee-culture has been produced. A new era has been created for it, and bee-keepers are turning their attention to it with renewed zeal. The merits of his discoveries are appreciated by the government, and they recommend his system as worthy the attention of the teachers of common schools.

"Mr. Dzierzon resides in a poor sandy district of Middle Silesia, which, according to the common notions of apiarians, is unfavorable to bee-culture. Yet despite of this and of various mishaps, he has succeeded in realizing 900 dollars as the product of his bees in one season!

"By his mode of management, his bees yield, even in the poorest years, from 10 to 15 per cent. on the capital invested, and where the colonies are produced by the apiarian's own skill and labor, they cost him only about one-fourth the price at which they are usually valued. In ordinary seasons, the profit amounts to from 30 to 50 per cent., and in very favorable seasons from 80 to 100 per cent."

In communicating these facts to the public, I have several objects in view. I freely acknowledge that I take an honest pride in establishing my claims as an independent observer, and as having matured, by my own discoveries, the same system of bee-culture as that which has excited so much interest in Germany; I desire also to have the testimony of the translator of Dzierzon to the superior merits of my hive. Mr. Wagner is extensively known as an able German scholar. He has taken all the numbers of the Bee Journal, a monthly periodical, which has been published for more than fifteen years in Germany, and is probably more familiar with the state of apiarian culture abroad, than any man in this country.
I am anxious further to show, that the great importance which I attach to my system of management is amply justified by the success of those who, while pursuing the same system with inferior hives, have attained results which, to common bee-keepers, seem almost incredible. Inventors are very prone to form exaggerated estimates of the value of their labors; and the American public has been so often deluded with patent hives, devised by persons ignorant of the most important principles in the natural history of the bee, and which have utterly failed to answer their professed objects, that they are scarcely to be blamed for rejecting every new hive as unworthy of confidence.

There is now a prospect that a Bee Journal will, before long, be established in this country. Such a publication has long been needed. Properly conducted, it would have a most powerful influence in disseminating information, awakening enthusiasm, and guarding the public against the miserable impositions to which it has so long been subjected.

Two such journals are now published monthly in Germany, one of which has been in existence for more than 15 years—and their wide circulation has made thousands well acquainted with those principles which must constitute the foundation of any enlightened and profitable system of culture.

THE HONEY-BEE CAPABLE OF BEING TAMED OR DOMESTICATED TO A MOST SURPRISING DEGREE.

If the bee had not such a necessary and yet formidable weapon, both of offence and defence, multitudes would be induced to enter upon its cultivation who are now afraid to have anything to do with it. As the new system of management which I have devised seems to add to this inherent difficulty, by taking the greatest possible liberties with so irascible an insect, I deem it important to show clearly, in the very outset, how bees may be managed, so that all necessary operations may be performed in an apiary, without incurring any serious risk of exciting their anger.

Many persons have been unable to control their expressions of wonder and astonishment, on seeing me open hive after hive, in my experimental apiary, in the vicinity of Philadelphia, removing the combs covered with bees, and shaking them off in
front of the hives; exhibiting the queen, transferring the bees to another hive, and, in short, dealing with them as if they were as harmless as so many flies. I have sometimes been asked if the bees with which I was experimenting had not been subjected to a long course of instruction, to prepare them for public exhibition; when in some cases the very hives which I was opening contained swarms which had been brought only the day before to my establishment.

Before entering upon the natural history of the bee, I shall anticipate some principles in its management, in order to prepare my readers to receive, without the doubts which would otherwise be very natural, the statements in my book, and to convince them that almost any one favorably situated, may safely enjoy the pleasure and profit of a pursuit which has been most appropriately styled "the poetry of rural economy;" and that, without being made too familiar with a sharp little weapon, which can most speedily and effectually convert all the poetry into very sorry prose.

The Creator intended the bee for the comfort of man, as truly as he did the horse or the cow. In the early ages of the world—indeed until very recently—honey was almost the only natural sweet; and the promise of "a land flowing with milk and honey" had then a significance, the full force of which it is difficult for us to realize. The honey-bee was, therefore, created not merely with the ability to store up its delicious nectar for its own use, but with certain properties which fitted it to be domesticated, and to labor for man, and without which, he would no more have been able to subject it to his control, than to make a useful beast of burden of a lion or a tiger.

One of the peculiarities which constitutes the very foundation, not merely of my system of management, but of the ability of man to domesticate at all so irascible an insect, has never, to my knowledge, been clearly stated as a great and controlling principle. It may be thus expressed:

A honey-bee never volunteers an attack, nor acts on the offensive, when it is gorged or filled with honey.

The man who first attempted to lodge a swarm of bees in an artificial hive, was doubtless agreeably surprised at the case with which he was able to accomplish it. For when the bees are in-
tending to swarm, they fill their honey-bags to their utmost capacity. This is wisely ordered, that they may have materials for commencing operations immediately in their new habitation; that they may not starve if several stormy days should follow their emigration; and that when they leave their hives, they may be in a suitable condition to be secured by man.

They issue from their hives in the most peaceable mood that can well be imagined; and unless they are abused, allow themselves to be treated with great familiarity. The hiving of bees by those who understand their nature, could almost always be conducted without the risk of any annoyance, if it were not the case that some improvident or unfortunate ones occasionally come forth without the soothing supply, and not being stored with honey, are filled with the gall of the bitterest hate against all mankind and animal kind in general, and any one who dares meddle with them in particular. Such radicals are always to be dreaded, for they must vent their spleen on something, even though they lose their life in the act.

Suppose the whole colony, on sallying forth, to possess such a ferocious spirit; no one would ever dare hive them, unless clad in a coat of mail, at least bee-proof, and not even then, until all the windows of his house were closed, his domestic animals bestowed in some safe place, and sentinels posted at suitable stations, to warn all comers to look out for something almost as much to be dreaded as a fiery locomotive in full speed. In short, if the propensity to be exceedingly good-natured after a hearty meal had not been given to the bee, it could never have been domesticated, and our honey would still be procured from the clefts of rocks, or the hollows of trees.

A second peculiarity in the nature of the bee, and one of which I continually avail myself with the greatest success, may be thus stated:

*Bees cannot, under any circumstances, resist the temptation to fill themselves with liquid sweets.*

It would be quite as easy for an inveterate miser to look with indifference upon a golden shower of double-eagles falling at his feet and soliciting his appropriation. If then we can contrive a way to call their attention to a treat of running sweets, when
we wish to perform any operation which might provoke them, we may be sure they will accept it, and under its genial influence allow us without molestation to do what we please.

We must always be particularly careful not to handle them roughly, for they will never allow themselves to be pinched or hurt without thrusting out their sting to resent such an indignity. I always keep a small watering-pot or sprinkler in my apiary, and whenever I wish to operate upon a hive, as soon as the cover is taken off, and the bees exposed, I sprinkle them gently with water sweetened with sugar. They help themselves with the greatest eagerness, and in a few moments are in a perfectly manageable state. The truth is, that bees managed on this plan are always glad to see visitors, and you cannot look in upon them too often, for they expect at every call to receive a sugared treat by way of a peace-offering.

I can superintend a large number of hives, performing every operation that is necessary for pleasure or profit, and yet not run the risk of being stung, which must frequently be incurred in attempting to manage, in the simplest way, the common hives. Those who are timid may, at first, use a bee-dress; though they will soon discard everything of the kind, unless they are of the number of those to whom the bees have a special aversion. Such unfortunates are sure to be stung whenever they show themselves in the vicinity of a bee-hive, and they will do well to give the bees a very wide berth.

Apiarians have, for many years, employed the smoke of tobacco for subduing their bees. It deprives them at once of all disposition to sting, but it ought never to be used for such a purpose. If the construction of the hives will not permit the bees to be sprinkled with sugar-water, the smoke of burning paper or rags will answer every purpose, and the bees will not be likely to resent it; whereas, when they recover from the effect of the tobacco, they not unfrequently remember, and in no very gentle way, the operator who administered the nauseous dose.

Let all your motions about your hives be gentle and slow; accustom your bees to your presence; never crush or injure them in any operation; acquaint yourself fully with the principles of management detailed in this treatise, and you will find
that you have but little more reason to dread the sting of a bee than the horns of your favorite cow, or the heels of your faithful horse.

THE QUEEN OR MOTHER-BEE, THE DRONES, AND THE WORKERS; WITH VARIOUS HIGHLY IMPORTANT FACTS IN THEIR NATURAL HISTORY.

Bees can flourish only when associated in large numbers, as a colony. In a solitary state, a single bee is almost as helpless as a new-born child; it is unable to endure even the ordinary chill of a cool summer night.

If a strong colony of bees is examined, a short time before it swarms, three different kinds of bees will be found in the hive.

1st. A bee of peculiar shape, commonly called the queen-bee.

2d. Some hundreds, more or less, of large bees, called Drones.

3d. Many thousands of a smaller kind, called workers or common bees, and similar to those which are seen on the blossoms. A large number of the cells will be found filled with honey and bee-bread; while vast numbers contain eggs, and immature workers and drones. A few cells of unusual size are devoted to the rearing of young queens, and are ordinarily to be found in a perfect condition only in the swarming season.

The queen-bee is the only perfect female in the hive, and all the eggs are laid by her. The drones are the males, and the workers are females, whose ovaries or "egg-bags" are so imperfectly developed that they are incapable of breeding, and which retain the instinct of females only so far as to give the most devoted attention to feeding and rearing the brood.

These facts have all been demonstrated repeatedly, and are as well established as the most common facts in the breeding of our domestic animals. The knowledge of them in their most important bearings is absolutely essential to all who expect to realize large profits from an improved method of rearing bees. Those who will not acquire the necessary information, if they keep bees at all, should manage them in the old-fashioned way which requires the smallest amount either of knowledge or skill.

I am perfectly aware how difficult it is to reason with a large class of bee-keepers, some of whom have been so often imposed
upon that they have lost all faith in the truth of any statement which may be made, while others stigmatize all knowledge which does not square with their own, as "book-knowledge," and unworthy the attention of practical men.

If any such read this article, let me remind them that all my assertions may be put to the test. So long as the interior of a hive was to common observers a profound mystery, ignorant and designing men might assert what they pleased about what passed in its dark recesses; but hives have for many years been in use, containing only one large comb, enclosed on both sides by glass. These hives are darkened by shutters, and, when opened, the queen is exposed to observation, as well as all the other bees. Within the last two years, I have discovered that, with proper precautions, colonies can be made to work in observing hives, without shutters, and exposed continually to the full light of day; so that observations may be made at all times, without in the least interrupting the ordinary operations of the bees. By the aid of such hives, some of the most intelligent citizens of Philadelphia have seen in my apiary the queen-bee depositing her eggs in the cells, and constantly surrounded by an affectionate circle of her devoted children. They have also witnessed, with astonishment and delight, all the steps in the mysterious process of raising queens from eggs which, with the ordinary development, would have produced only the common bees. For more than three months there was not a day in which some of my colonies were not engaged in making new queens to supply the place of those taken from them, and I had the pleasure of exhibiting all the facts to bee-keepers who never before felt willing to credit them. As all my hives are so made that each comb can be taken out and examined at pleasure, those who use them can obtain from them all the information which they need, and are no longer forced to take anything upon trust.

May I be permitted to express the hope that the time is now at hand when the number of practical observers will be so multiplied, that ignorant and designing men will neither be able to impose their conceits and falsehoods upon the public, nor be sustained in their attempts to depreciate the valuable discoveries of those who have devoted years of observation and experiment to promote the advancement of apiarian knowledge.
The queen-bee, or, as she may more properly be called, the mother-bee, is the common mother of the whole colony. She reigns, therefore, most unquestionably, by a divine right; as every mother is, or ought to be, a queen in her own family. Her shape is entirely different from that of the other bees. While she is not near so bulky as a drone, her body is longer, and of a more tapering or sugar-loaf form than that of a worker, so that she has somewhat a wasp-like appearance. Her wings are much shorter, in proportion, than those of the drone or worker; the under part of her body is of a golden color, and the upper part darker than that of the other bees. Her motions are usually slow and matronly, although she can, when she pleases, move with astonishing quickness.

No colony can long exist without the presence of this all-important insect. She is just as necessary to its welfare as the soul is to the body, for a colony without a queen must as certainly perish as a body without the spirit hastens to inevitable decay.

She is treated by the bees, as every mother ought to be by her children, with the most unbounded respect and affection. A circle of her loving offspring constantly surround her, testifying, in various ways, their dutiful regard; offering her honey from time to time, and always most politely getting out of her way, to give her a clear path when she wishes to move over the combs. If she is taken from them, as soon as they have ascertained their loss, the whole colony is thrown into a state of the most intense agitation; all the labors of the hive are at once abandoned; the bees run wildly over the combs, and frequently the whole of them rush forth from the hive, and exhibit all the appearance of anxious search for their beloved mother. Not being able anywhere to find her, they return to their desolate home, and by their mournful tones reveal their deep sense of so deplorable a calamity. Their note at such times, more especially when they first realize her loss, is of a peculiarly mournful character; it sounds something like a succession of wails on the minor key, and can no more be mistaken by the experienced bee-keeper for their ordinary happy hum, than the piteous moanings of a sick child can be confounded by an anxious mother with its joyous crowings, when overflowing with health and happiness.
I am perfectly aware that all this will sound to many much more like romance than sober reality; but I shall state facts, however wonderful, just as they are, confident that they will, before long, be universally received, and hoping that the many wonders in the economy of the honey-bee will not only excite a wider interest in its culture, but will lead those who observe them to adore the wisdom of Him who gave them such admirable instincts.

The fertility of the queen-bee has been much under-estimated by most writers. It is truly astonishing. During the height of the breeding season she will often, under favorable circumstances, lay from two to three thousand eggs a day! In my observing hives, I have seen her lay at the rate of six eggs a minute! The fecundity of the female of the white ant is much greater than this, as she will lay as many as sixty eggs a minute; but then her eggs are simply extruded from her body, to be carried by the workers into suitable nurseries, while the queen-bee herself deposits her eggs in their appropriate cells.

THE WAY IN WHICH THE EGGS OF THE QUEEN-BEE ARE FECUNDATED.

I come now to a subject of great practical importance, and one which, until quite recently, has been attended with apparently insuperable difficulties.

It has been noticed that the queen-bee commences laying in the latter part of winter, or early in spring, and long before there are any drones or males in the hive. In what way are these eggs impregnated? Huber, by a long course of experiments most carefully conducted, ascertained that, like many other insects, she is fecundated in the open air, and on the wing, and that the influence of this lasts for several years, and probably for life. He could not form any satisfactory conjecture as to the way in which the eggs which were not yet developed in her ovaries, could be fertilized. Years ago, the celebrated Dr. John Hunter, and others, supposed that there must be a permanent receptacle for the male sperm, opening into the passage for the eggs called the oviduct. Dzierzon, a Prussian clergyman, who must be regarded as one of the ablest contributors of modern times to apiarian science, maintains this opinion, and states that
he has found such a receptacle filled with a fluid resembling the semen of the drones. He nowhere, to my knowledge, states that he ever made microscopic examinations, so as to put the matter on the footing of demonstration.

In January and February of 1852, I submitted several queen-bees to Dr. Joseph Leidy, of Philadelphia, for a scientific examination. I need hardly say to any naturalist in this country that Dr. Leidy has obtained the very highest reputation, both at home and abroad, as a skilful naturalist and microscopic anatomist. No man in this country or Europe was more competent to make the investigations that I desired. He found, in making his dissections, a small globular sac, not larger than a grain of mustard-seed, (about $\frac{1}{3}$ of an inch in diameter,) communicating with the oviduct, and filled with a whitish fluid, which, when examined under the microscope, was found to abound in spermatozoa, or the animalcule, which are the unmistakable characteristics of the seminal fluid. Later in the season, the same substance was compared with some taken from the drones, and found to be exactly similar to it.

These examinations have settled, on the impregnable basis of demonstration, the mode in which the eggs of the queen are vivified. In descending the oviduct to be deposited in the cells, they pass by the mouth of this seminal sac or spermatheca, and receive a portion of its fertilizing contents. Small as it is, its contents are sufficient to impregnate hundreds of thousands of eggs. In precisely the same way, the mother-wasps and hornets are fecundated. The females alone of these insects survive the winter, and they begin, single-handed, the construction of a nest in which, at first, only a few eggs are deposited. How could these eggs hatch, if the females which laid them had not been impregnated the previous season? Dissection proves them to have a spermatheca, similar to that of the queen-bee.

Of all who have written against Huber, no one has treated him with more unfairness, misrepresentation, and I might almost add malignity, than Huish. He maintains that the eggs of the queen are impregnated by the drones, after she has deposited them in the cells, and accounts for the fact that brood is produced in the spring, long before the existence of any drones in the hive, by asserting that these eggs were deposited and im-
pregnatod late in the previous season, and have remained dorr-
mant all winter in the hive: and yet the same writer, while
ridiculing the discoveries of Huber, advises that all the mother-
wasps should be killed in the spring, to prevent them from found-
ing families to commit depredations upon the bees! It never
seems to have occurred to him, that the existence of a perma-
nently impregnated mother-wasp was just as difficult to be
accounted for as the existence of a similarly impregnated queen-
bee.

EFFECT OF RETARDED IMPREGNATION ON THE QUEEN-BEE.

I shall now mention a fact in the physiology of the queen-bee,
more singular than any which has yet been related.

Huber, while experimenting to ascertain how the queen was
fecundated, confined some of his young queens to their hives by
contracting the entrances, so that they were not able to go in
search of the drones until three weeks after their birth. To his
amazement, these queens whose impregnation was thus unnatu-
raly retarded, never laid any eggs but such as produced
drones!!

He tried the experiment again and again, but always with the
same result. Some bee-keepers, long before his time, had ob-
served that all the brood in a hive were occasionally drones, and
of course that such colonies rapidly went to ruin. Before attempt-
ing any explanation of this astonishing fact, I must call the
attention of the reader to another of the mysteries of the bee-
hive.

FERTILE WORKERS.

It has already been remarked, that the workers are proved by
dissection to be females, all of which, under ordinary circum-
stances, are barren. Occasionally, some of them appear to be
more fully developed than common, so as to be capable of laying
eggs: these eggs, like those of queens whose impregnation has
been retarded, always produce drones! Sometimes, when a
colony has lost its queen, these drone-laying workers are exalted
to her place, and treated with equal respect and affection by the
bees. Huber ascertained that these fertile workers were gener-
ally reared in the neighborhood of the young queens, and he
thought that they received some particles of the peculiar food
or jelly on which the queens are reared (see Royal Jelly). He did not pretend to account for the effect of retarded impregna-
tion, and made no experiments to determine the facts as to the
fecundation of these fertile workers.

Since the publication of Huber's work, nearly fifty years ago, no light has been shed upon the mysteries of drone-laying queens and workers until quite recently. Dzierzon appears to have been the first to ascertain the truth on this subject; and his discovery must certainly be ranked as unfolding one of the most astonishing facts in all the range of animated nature. This fact seems, at first view, so absolutely incredible, that I should not dare mention it, if it were not supported by the most indubitable evidence, and if I had not, (as I have already observed,) determined to state all important and well-ascertained facts, without seeking, by any concealment, to pander to the prejudices of conceited and often very ignorant bee-keepers.

Dzierzon advances the opinion that impregnation is not needed in order that the eggs of the queen may produce drones, but that all impregnated eggs produce females, either workers or queens; and all unimpregnated ones, males or drones. He states that he found drone-laying queens in several of his hives, whose wings were so imperfect that they could not fly, and that on examination they proved to be unfecundated. Hence he con-
cluded that the eggs of the queen-bee or fertile worker had, from the previous impregnation of the egg which produced them, sufficient vitality to produce the drone, which is a less highly organized insect, and one inferior to the queen or workers. It had long been known that the queen deposits drone-eggs in the large or drone-cells, and worker-eggs in the small or worker-
cells, and that she makes no mistakes. Dzierzon inferred, there-
fore, that there was some way in which she was able to decide as to the sex of the egg before it was laid, and that she must have a control over the mouth of the seminal sac, so as to be able to extrude her eggs, allowing them to receive or not, just as she pleased, a portion of its fertilizing contents. In this way he thought she determined the sex, according to the size of the cells in which she laid them. Mr. Samuel Wagner, of York, Pa., has recently communicated to me a very original and exceedingly ingenious theory of his own, which he thinks will account for all
the facts without admitting that the queen-bee has any special knowledge or will on the subject. He supposes that when she deposits her eggs in the worker-cells, her body is slightly compressed by the size of the cells, and that the eggs, as they pass the spermatheca, receive in this manner its vivifying influence. On the contrary, when she is egg-laying in drone-cells, this compression cannot take place, the mouth of the spermatheca is kept closed, and the eggs are, necessarily, unfecundated. This theory may prove to be true, but at present it is encumbered with some difficulties, and requires further investigation before it can be considered as fully established.

Leaving then the question whether the queen exercises any volition in this matter for the present undecided, I shall state some facts which occurred in the summer of 1852, in my own apiary, and shall then endeavor to relieve, as far as possible, this intricate subject from some of the difficulties which embarrass it.

In the autumn of 1852, my assistant found, in one of my hives, a young queen, the whole of whose progeny was drones. The colony had been formed by removing part of the combs containing bees, brood, and eggs from another hive. It had only a few combs, and but a small number of bees. They raised a new queen in the manner which will hereafter be particularly described. This queen had laid a number of eggs in one of the combs, and the young bees from some of them were already emerging from the cells. I perceived, at the first glance, that they were drones. As there were none but worker-cells in the hive, they were reared in them, and not having space for full development, they were dwarfed in size, although the bees, in order to give them more room, had pieced out the cells so as to make them larger than usual! Size excepted, they appeared as perfect as any other drones.

I was not only struck with the singularity of finding drones reared in worker-cells, but with the equally singular fact that a young queen, which at first lays only the eggs of workers, should be laying drone-eggs at all; and at once conjectured that this was a case of a drone-laying, unimpregnated queen, as sufficient time had not elapsed for her impregnation to be unnaturally retarded. I saw the great importance of taking all necessary
precautions to determine this point. The queen was removed from the hive, and carefully examined. Her wings, although they appeared to be perfect, were so paralyzed that she could not fly. It seemed probable, therefore, that she had never been able to leave the hive for impregnation.

To settle the question beyond the possibility of doubt, I submitted this queen to Dr. Joseph Leidy for microscopic examination. The following is an extract from his report:—"The ovaries were filled with eggs; the poison-sac was full of fluid, and I took the whole of it into my mouth; the poison produced a strong metallic taste, lasting for a considerable time, and at first it was pungent to the tip of the tongue. The spermatheca was distended with a perfectly colorless, transparent, viscid liquid, without a trace of spermatozoa."

This examination seems perfectly to sustain the theory of Dzierzon, and to demonstrate that queens do not need be impregnated, in order to lay the eggs of males.

I must confess that very considerable doubts rested on my mind, as to the accuracy of Dzierzon's statements on this subject, and chiefly because of his having hazarded the unfortunate conjecture that the place of the poison-bag in the worker is occupied in the queen by the spermatheca. Now this is so completely contrary to fact, that it was a very natural inference that this acute and thoroughly honest observer made no microscopic dissections of the insects which he examined. I consider myself peculiarly fortunate in having enjoyed the benefit of the labors of a naturalist so celebrated as Dr. Leidy for microscopic dissections. The exceeding minuteness of some of the insects which he has completely figured and described almost passes belief.

On examining this same colony a few days later, I obtained the most satisfactory evidence that these drone-eggs were laid by the queen which had been removed. No fresh eggs had been deposited in the cells, and the bees, on missing her, had commenced the construction of royal cells, to rear, if possible, another queen, a thing which they would not have done, if a fertile worker had been present by which the drone-eggs had been laid.

Another very interesting fact proves that all the eggs laid by this queen were drone-eggs. Two of the royal cells were, in a short time, discontinued, and were found to be empty, while a
third contained a worm, which was sealed over, the usual way, to undergo its changes from a worm to a perfect queen.

I was completely at a loss to account for this, as the bees, having an unimpregnated drone-laying queen, ought not to have had a single female egg from which they could rear a queen.

At first I imagined that they might have stolen it from another hive; but when I opened this cell, it contained, instead of a queen, a dead drone!

I then remembered that Huber has described the same mistake on the part of some of his bees. At the base of this cell was an extraordinary quantity of the peculiar jelly or paste which is fed to the young that are to be transformed into queens. The poor bees, in their desperation, appear to have dosed the unfortunate drone to death, as though they expected by such liberal feeding to produce some hopeful change in his sexual organization!

It appears to me that these facts constitute all the links in a perfect chain, and demonstrate beyond the possibility of doubt, that unfecundated queens are not only capable of laying eggs, (this would be no more remarkable than the same occurrence in a hen,) but that these eggs are possessed of sufficient vitality to produce drones. Aristotle, who flourished before the Christian era, had noticed that there was no difference in appearance between the eggs producing drones and those producing workers; and he states that drones only are produced in hives which have no queen; of course, the eggs producing them were laid by fertile workers. Having now the aid of powerful microscopes, we are still unable to detect the slightest difference in size or appearance in the eggs, and this is precisely what we should expect if the same egg will produce either a worker or a drone, according as it is or is not impregnated. The theory which I propose will, I think, perfectly harmonize with all the observed facts on this subject.

I believe that after fecundation has been delayed for about three weeks, the mouth of the spermatheca becomes permanently closed, so that impregnation can no longer be effected, just as the parts of a flower, after a certain time, wither and shut up, and the plant is incapable of fructification. The fertile drone-laying workers are, in my opinion, physically incapable of being
impregnated. However strange it may appear, or even improbable, that an unimpregnated egg can give birth to a living being, or that the sex can be dependent on impregnation, we are not at liberty to reject facts, because we cannot comprehend the reasons of them. He who allows himself to be guilty of such folly, if he seeks to maintain his consistency, will be plunged, sooner or later, into the dreary gulf of atheism. Common sense, philosophy, and religion, alike teach us to receive all undoubted facts in the natural and the spiritual world with becoming reverence; assured that, however mysterious to us, they are all most beautifully harmonious and consistent in the sight of Him whose “understanding is infinite.”

There is something analogous to these wonders in the bee, in what takes place in the aphides or green lice which infest our rose-bushes and other plants. We have the most undoubted evidence that a fecundated female gives birth to other females, and they in turn to others still, all of which, without impregnation, are able to bring forth young, until at length, after a number of generations, perfect males and females are produced, and the series starts anew!

The unequalled facilities furnished by my hives have seemed to render it peculiarly incumbent on me to do all in my power to clear up the difficulties in this intricate and yet highly important branch of apiarian knowledge. All the leading facts in the breeding of bees ought to be as well known to the beekeeper, as the same class of facts in the rearing of his domestic animals. A few crude and hasty notions, but half understood and half digested, will answer only for the old-fashioned beekeeper, who deals in the brimstone matches. He who expects to conduct bee-keeping on a safe and profitable system, must learn that on this, as on all other subjects, “knowledge is power.”

THE PROCESS OF REARING THE QUEEN MORE PARTICULARLY DESCRIBED.

If, in the early part of the season, the population of a hive becomes uncomfortably crowded, the bees usually make preparations for swarming. A number of royal cells are commenced, and they are placed almost always upon those edges of the
combs which are not attached to the sides of the hive. These cells somewhat resemble a small ground-nut or pea-nut, and are about an inch deep, and one-third of an inch in diameter; they are very thick, and require a large quantity of material for their construction. They are seldom seen in a perfect state, as the bees nibble them away after the queen has hatched, leaving only their remains, in the shape of a very small acorn-cup. While the other cells open sideways, these always hang with the mouth downwards. Much speculation has arisen as to the reason for this deviation; some have conjectured that their peculiar position exerted an influence upon the development of the royal larvae; while others, having ascertained that no injurious effect was produced by turning them upwards, or placing them in any other position, have considered this deviation as among the inscrutable mysteries of the bee-hive. So it always seemed to me, until more careful reflection enabled me to solve the problem. The queen-cells open downwards, simply to save room! The distance between the parallel ranges of comb being usually less than half an inch, the bees could not have made the royal cells open sideways without sacrificing the cells opposite to them. In order to economize space to the very utmost, they put them upon the unoccupied edges of the comb, as the only place where there is always plenty of room for such very large cells.

The number of royal cells varies greatly; sometimes there are only two or three; ordinarily there are five or six, and I have occasionally seen more than a dozen.* They are not all commenced at once, for the bees do not intend that the young queens shall all arrive at maturity at the same time. I do not consider it as fully settled how the eggs are deposited in these cells. In some few instances, I have known the bees to transfer the eggs from common to queen-cells, and this may be their general method of procedure. I shall hazard the conjecture that the queen deposits her eggs in cells on the edges of the comb in a crowded state of the hive, and that some of these are afterwards enlarged and changed into royal cells by the workers. Such is the instinctive hatred of the queen to her own kind, that it does not seem to me probable that she is intrusted with even the initiatory steps for securing a race of successors. That the eggs from which

* Swammerdam says that thirty have been found in a hive.
the young queens are produced are of the same kind with those producing workers, has been repeatedly demonstrated. On examining the queen-cells while they are in progress, one of the first things which excites our notice is the very unusual amount of attention bestowed upon them by the workers. There is scarcely a second in which a bee is not peeping into them, and just as fast as one is satisfied, another pops its head in, to examine if not to report progress. The importance of their inmates to the bee-community might easily be inferred from their being the centre of so much attraction.

ROYAL JELLY.

The young queens are supplied with a much larger quantity of food than is allotted to the other larvae, so that they seem almost to float in a thick bed of jelly, and there is usually a portion of it left unconsumed at the base of the cells, after the insects have arrived at maturity. It is different from the food of either drones or workers, and in appearance resembles a light quince-jelly, having a slightly acid taste.

I submitted a portion of the royal jelly for analysis to Dr. Charles M. Wetherill, of Philadelphia. A very interesting account of his examination may be found in the proceedings of the Philadelphia Academy of Natural Sciences for July, 1852. He speaks of the substance as "truly a bread-containing, albuminous compound." I hope in the course of the coming summer to obtain from this able analytical chemist an analysis of the food of the young drones and workers. A comparison of its elements with those of the royal jelly may throw some light on subjects as yet involved in obscurity.

The effects produced upon the larvae by this peculiar food and method of treatment are very remarkable. For one, I have never considered it strange that such effects should be rejected as idle whims by nearly all except those who have either been eye-witnesses to them, or have been well acquainted with the character, and opportunities for accurate observation, of those on whose testimony they have received them. They are not only in themselves most marvellously strange, but, on the face of them, so entirely opposed to all common analogies, and so very improbable, that many men, when asked to believe them,
feel almost as though an insult were offered to their common sense. The most important of these effects I shall now proceed to enumerate.

1st. The peculiar mode in which the worm designed to be reared as a queen is treated, causes it to arrive at maturity about one-third earlier than if it had been bred a worker. And yet it is to be much more fully developed, and, according to ordinary analogy, ought to have had a slower growth!

2d. Its organs of reproduction are completely developed, so that it is capable of fulfilling the office of a mother.

3d. Its size, shape, and color are all greatly changed (see p. 71). Its lower jaws are shorter, its head rounder, and its legs have neither brushes nor baskets, while its sting is more curved, and one-third longer than that of a worker.

4th. Its instincts are entirely changed. Reared as a worker, it would have been ready to thrust out its sting upon the least provocation; whereas, now it may be pulled limb from limb, without attempting to sting. As a worker, it would have treated a queen with the greatest consideration; whereas now, if placed under a glass with another queen, it rushes forthwith to mortal combat with its rival. As a worker, it would frequently have left the hive, either for labor or exercise; as a queen, after impregnation, it never leaves the hive except to accompany a new swarm.

5th. The term of its life is remarkably lengthened. As a worker, it would have lived not more than six or seven months at farthest; as a queen, it may live seven or eight times as long! All these wonders rest on the impregnable basis of complete demonstration, and instead of being witnessed by only a select few, may now, by the use of my hive, be familiar sights to any beekeeper who prefers to acquaint himself with facts, rather than to cavil and sneer at the labors of others.

When provision has been made in the manner described for a new race of queens, the old mother always departs with the first swarm, before her successors have arrived at maturity.

ARTIFICIAL REARING OF QUEENS.

The distress of the bees when they lose their queen has already been described. If they have the means of supplying her loss
they soon calm down, and commence forthwith the necessary steps for rearing another. The process of rearing queens artificially, to meet some special emergency, is even more wonderful than the natural one, which has already been described. Its success depends on the bees having worker-eggs or worms not more than three days old (if older, the larva has been too far developed as a worker to admit of any change); the bees nibble away the partitions of two cells adjoining a third, so as to make one large cell out of the three. They destroy the eggs or worms in two of these cells, while they place before the occupant of the third the usual food of the young queens, and build out its cell so as to give it ample space for development. They do not confine themselves to the attempt to rear a single queen, but to guard against failure start a considerable number, although the work on all except a few is usually soon discontinued.

In twelve or fourteen days they are in possession of a new queen, precisely similar to one reared in the natural way; while the eggs which were laid at the same time in the adjoining cells, and which have been developed in the usual way, are nearly a week longer in coming to maturity.

I will close this article with a description of an interesting experiment.

A large hive, which stood at a distance from any other colony, was removed in the morning of a very pleasant day, to a new place, and another hive, containing only empty comb, was put upon its stand. Thousands of workers which were out in the fields, or which left the old hive after its removal, returned to the familiar spot. It was affecting to witness their grief and despair; they flew in restless circles about the place which once contained their happy home, entered and left the new hive continually, expressing, in various ways, their lamentations over their cruel bereavement. Towards evening, they ceased to take wing, and roamed in restless platoons, in and out of the hive, and over its surface, acting all the time as though in search of some lost treasure. I now gave them a piece of brood-comb, containing worker-eggs and worms, taken from a second swarm, which, being just established with its young queen, in a new hive, could have no intention of rearing young queens that season; therefore, it cannot be contended that this piece of comb
contained what some are pleased to call “royal eggs.” What followed the introduction of this brood-comb took place much quicker than it can be described. The bees which first touched it raised a peculiar note, and in a moment the comb was covered with a dense mass; their restless motions and mournful noises ceased, and a cheerful hum at once attested their delight! Despair gave place to hope, as they recognized in this small piece of comb the means of deliverance. Suppose a large building filled with thousands of persons tearing their hair, beating their breasts, and by piteous cries, as well as frantic gestures, giving vent to their despair; if now some one should enter this house of mourning, and by a single word cause all these demonstrations of agony to give place to smiles and congratulations, the change could not be more wonderful and instantaneous than that produced when the bees received the brood-comb!

---

**SCIENTIFIC EPOCH.**

**BY JOSIAH HOLBROOK.**

The next ten years are to form a Scientific Epoch, so say the signs of the times. For several years past, a singular coincidence and combination of events have indicated such a period as near. At the present time the elements of science and the elements of society, in their connected *practical workings*, show almost to a demonstration that scientific knowledge is soon to be scattered like the dews of heaven over all countries.

The public press is destined soon to become one grand “Scientific Journal.” The newspaper press and the book press have already made a visible and a reliable advancement towards such a character. Let this omnipotent engine of power be once recognized as the vehicle of sound scientific knowledge in schools, families, halls of legislation, farms, workshops, fashionable society, social intercourse, and in all the pursuits and all the walks of human purposes, and who does not see that a scientific epoch will already have arrived.
Within a few years to come, under a probable absence of political excitement, perhaps any excitement of antagonisms, an excitement of combinations for mutual benefit will most likely take its place. A more enlightened, and of course a more pacific policy between nations, is now under fair promise. Scientific interchanges among nations are progressing rapidly, widely, intimately. "World's Fairs," and "Fairs" all over the world, are fast becoming, have already become the fashion of the age. Fairs among schools and families are advancing rapidly and effectively in the train. Rather, they commenced the train.

Making science as common and as free as the air we breathe in all the industrial pursuits, must be the strong feature of a scientific epoch. Among these pursuits, agriculture, of course, holds the first place. The progress already made by agricultural science is a sure pledge of a complete triumph. Agricultural chemistry and geology are household terms. To an extent which few are aware of, both these sciences are subjects of primary instruction in schools. Essential to chemistry is geometry, or the science of forms. The change and greatly varied modification of crystalline forms, resulting from chemical analysis, are exceedingly beautiful and instructive.

Hence "Mechanism" comes in as necessary for the science as it is for the practice of agriculture. Every farmer must also be a mechanic. His mechanical operations are numberless and nameless. To the mechanic, the elements of mechanism are essential, of course;—they are to the housekeeper, indeed to everybody, as mechanical operations of some kind are performed every moment by every human being, and by myriads of beings not human. Insects are small animals but great mechanics. The bee, the spider, the silk-worm, the coral insect, and myriads of animals too small for human vision, furnish lessons in mechanism full of instruction to the lords of creation.

The elements and the practical workings of mechanism are more simple, more vast, more beautiful and sublime, and more useful than any other subject. In hastening and characterizing a scientific epoch, this subject must hence take a prominent part. When presented in its great simplicity, in connection with its other distinguished qualities, it never fails to excite enthusiasm with young minds, as it gives great energy and skill to young
hands. When relieved from the neglect to which it has been subjected so long and so unjustly, and receives the prominent place it is entitled to in primary education, it must aid in giving beauty and prominence to other subjects, now like that almost wholly disregarded. Mechanism must surely do much to hasten a scientific epoch, as it will with equal certainty constitute one of its most prominent features.

The development and application of natural resources for the advancement of science, wealth, and morals are, and have been, leading objects of state and national policy. So it is, and so it has been, with all enlightened nations. England and France have done much to develop the resources of the world. One of the best works on American forest-trees was produced under the patronage of the French government. The whole world pays tribute to France for the excellency of her productions, resulting from the development and the application of science. In the chemical arts she excels all other nations; all take lessons from her.

Though much has been done for developing and applying American resources, much more remains to be done. Professional geologists, under national and State patronage, have, to a vast extent, unfolded and exhibited the character and the capabilities of our country. Aided by their labors, schools and families can and will complete the work. When the schools of the country become the explorers of the country, then will come the scientific epoch. Then will be furnished, in large abundance, materials for constituting the public press one grand scientific journal. Then will come into full and vigorous reciprocating action, the public press, and public schools. Then legislators, both State and national, will be furnished with the means of an intimate acquaintance with the character, the resources, the operations, and the capabilities of the districts they represent. Then will come wise and safe legislation. Then the fashionable literature will be scientific literature. Then the amusements of the young will be scientific amusements. Then the juvenile energies of the country will be so occupied with finding out the good, as to be relieved from the danger and the misfortune of falling into evil. Then school-houses will be sought for as places of the strongest attraction. Then truants will be unknown.
Then the walls erected for receiving juvenile offenders can be removed and converted into farm-enclosures. Then capitalists will find that a few thousands appropriated for preventing crime and promoting industry and morals, will render their property more secure than the millions now expended for punishing criminals and restoring their ravages. Then they will be relieved from the fear of incendiaries and the danger of the midnight assassin. Who does not see the approach of a scientific epoch? Who will consent to be deprived of the pleasure and the dignity of hastening it?

---

**COMPEND OF GEOLOGY.**

We invite attention to the following brief Compend of Geology, by Josiah Holbrook. It is a summing up of a series of short Essays by Mr. H. on Agricultural Geology. These Essays were widely circulated through this country by the American press, and by the agency of Foreign Ministers and other government functionaries from abroad, translated and published in other languages and countries.

Designed especially for farmers, the articles were followed by the same gentleman with a series on "Mechanism," intended both for farmers and mechanics. Though unaided by cuts or any illustrations, save a simple enunciation of the principles of Mechanism, in the broadest sense of the term, these papers were widely published in this and other countries, and very generally read and extensively put in practice; showing both their intrinsic value and the ease of their application.

A third series, headed "Democracy of Science," by Mr. H., designed to show the modes and plans for scattering the elements of Practical Science, like the dews of heaven, over all countries, has had a circulation equal to either of its predecessors. These repeated and varied missiles, all aiming at the same point, have evidently done much to awaken and enlighten public sentiment on the matters of paramount importance of which they treat.
Recently, the legislation of the whole country, in one way and another, has been directed prominently to practical science in special relation to the two great industrial pursuits—Agriculture and Mechanism.

This little compend, though brief and because brief, takes a bird’s-eye glance at the leading formations of the earth, presenting the principal elements of all rocks, especially those most interesting to farmers, whether as connected with soils, or for purposes of architecture. It appears from some remarks connected with the descriptive part of this compend, that it is designed to be read and studied in schools, aiming especially to aid pupils in making collections for their own use, both at school and at home.

The great simplicity of such a measure evidently renders it feasible through our entire country; indeed, over the whole globe. That first step taken, a second would be certain to follow—general action would lead to general reciprocation, giving to all concerned not only the advantage of their own immediate efforts, but of the efforts and the resources of each other. What can be presented to the world as a grand rallying point for all nations better than the elements of the earth, with the simple principles controlling and applying them for the benefit of the great industrial productive pursuits of the beings in the world. These elements and these principles have no locality—rather every place is their locality; they know no political party, as they are at the foundation of all national policy; they know no religious sect, but form the corner-stone of all sects, and are hence worthy of special attention in schools and families in all countries.

GEOLOGICAL CABINET—AN INTRODUCTION AND AID TO BOOKS.

BY JOSIAH HOLBROOK.

The Bible is a book of examples, founded on principles for the regulation of human conduct; especially so for the management of the mind and soul, or intellect and heart. The example furnished by it, as a starting point in the pursuit of knowledge,
is not only appropriate, as founded on Divine wisdom, but is equally simple, beautiful, and sublime. "In the beginning, God created the heavens and the earth," is the sentence commonly referred to, as a specimen of the very highest sublimity. Its sublimity is in its simplicity, connected with the glorious truth uttered. A sentence more full of instruction never has been, probably never will be uttered. It is also pre-eminently fitted to an inquisitive young mind, eagerly observing surrounding objects; at the same time rapidly and successfully, because practically learning them.

If the elements of the created universe form the First Lesson of the Creator to his creatures, why not follow the example thus set us by Him who created mind, as a starting point in the training of mind? In accordance with this example of Divine authority, the elements of our globe are selected as a first lesson for children. A Geological Cabinet is prepared, consisting of twenty-five mineral specimens, so selected, arranged, labelled, and described, as to show, almost at a glance, the elements and structure of mountains, rocks, and soils; exactly fitted to gratify the eager curiosity of every child to learn what he sees; not only by seeing, but by handling, examining, comparing, classifying, and other steps for acquiring the most substantial knowledge, by the most thorough modes of learning.

*Nature before Books, and Drawing before Writing,* is a motto always in accordance with common sense, and now completely tested by experience, both in this country and Europe. It is already widely adopted by both continents, and is certain soon to be observed by all persons, everywhere, in the early instruction of children. The "Alphabet of Geology," by preceding the "Alphabet of Books," changes the latter from an unmeaning, irksome task, to an instructive, delightful lesson; learnt rapidly and certainly, because practically and agreeably.

The principal families of rocks, or geological formations, are the granite family, composed of three members, and forming all the highest mountains in the world; the hornblende, or trap family, consisting also of three or four members, widely scattered over the earth; lime formations, very abundant, various, and useful; magnesian or serpentine formations, containing highly valuable ores; conglomerate rocks, or those formed from the
fragments of broken-down rocks; carbon, or coal formations; fossils, or organic remains, or rocks containing the remains of more than nine thousand animals, with those of numerous plants; coral ranges, very extensive, and still increasing, by the labors of insects of the sea; and volcanic rocks, composing numerous islands, and some mountains, from ten to fifteen thousand feet high. All these vast ranges of rocky and mountain masses, constituting the elements, the grandeur, and riches of our earth, beautifully and emphatically declare the sublime truth, that He who formed them has indeed and in truth, weighed the mountains in scales, and the hills in a balance.

Nos. 1 and 2.—Quartz is the only mineral found everywhere. It forms a considerable part of all the highest mountains in the world, is the principal element of soils, composes nearly all the pebbles upon shores and in banks of gravel and sand, is the only material essential in the manufacture of glass; and, in some of its varieties, formed most or all the gems mentioned as set in the breastplate of Aaron, the high priest; also, those mentioned as composing the streets of the New Jerusalem. Quartz also forms most of the precious stones used in all ages of the world, as personal ornaments, worn on fingers, breasts, &c., and hence furnishing, to a considerable extent, articles of commerce among nations.

It scratches most other minerals, and is hence one of the hardest. Its colors are white, red, brown, smoky, blue, green, yellow, and clouded, with various shades of different colors. The most common quartz crystal is a hexagonal or six-sided prism, ending in a pyramid, with the same number of sides. The names, determined by the colors, forms, &c., are milk-quartz, smoky, gray, yellow, rose, limpid, jasper, blue, red, and clouded quartz, with numerous other varieties. The gems are amethyst, or purple quartz; jasper, or red quartz; cornelian, yellowish-red; agate, clouded, &c., &c.

No. 3.—Burstone is porous quartz, principally brought from France, and used for the stones of flour-mills, and is preferable for that use to any other material yet discovered. Its great hardness and numerous pores give it the character of an aggregation of knives, admirably fitted for reducing wheat and other grains to flour.
No. 4. — *Feldspar* resembles quartz, and is extensively combined with it, in rocks, mountains, soils, &c. When pulverized, or decomposed, it forms clay, as pulverized quartz does sand. The two, combined, are the principal and essential ingredients of all soils, and of course should be fully and familiarly understood by all farmers. Feldspar is used for making China-ware, or porcelain, as quartz is for glass. It is scratched by quartz, and breaks more in the form of lamina, or a smooth table-surface, giving it the appearance of a collection of small steps. Its color is white, reddish-white, flesh-color, sometimes brown, and occasionally other colors. It is far less various, and less beautiful in its varieties, than quartz. When it has a glassy appearance, and is translucent, it is called adularia. Labrador feldspar, found extensively in Essex county, N. Y., is opalescent, or has a play of colors, as it is exposed to the light in different attitudes.

No. 5. — *Mica* unites with quartz and feldspar to form the Himmalayan Mountains, the Andes, Rocky Mountains, Alps, Pyrenees, Carpathian, Ural, and all the highest mountains in the world. It is also found in ledges and loose rocks, or boulders, widely scattered over different countries. It is easily split into leaves of almost any imaginable thinness, exceedingly elastic, and semi-transparent, and is thus fitted for the doors of stoves and other purposes, as a substitute for glass. In some parts of Russia, it is much used for the windows of houses, where it is known by the name of Muscovy glass. It is frequently called isinglass.

Nos. 6 and 7. — *Granite* is composed of quartz, felspar, and mica—the latter thrown about in every possible direction—rendering the rock *unstratified*, not slaty. It differs widely in the degree of fineness of the three ingredients composing it, the mica sometimes being in plates two feet or more in diameter; at other times in fine spangles, like scales, thickly scattered through the rock. The quartz and felspar also vary greatly in the size of the masses composing the granite.

Fine granite is best fitted for purposes of architecture, for which it is extensively used in many countries. In the United States are many quarries, furnishing building materials for all our seaports, and many inland towns and villages.

No. 8. — *Gneiss* is slaty granite, rendered so by the uniform
direction of the mica. It hence splits in slabs of large and smooth surface, fitting it for sidewalks, floors, bridges, and many other purposes of economy and convenience. It is the prevailing rock on New York island, as it is in many parts of New England, and many other places in the world. The color of gneiss depends, of course, upon that of the materials composing it, especially the mica, which is sometimes black, giving a black or dark color to the gneiss. It is more commonly of a lightish-grey, and sometimes silvery.

No. 9. — Mica Slate resembles gneiss, but is composed of quartz and mica. Feldspar, composing a part of granite and gneiss, is wanting in this rock. It frequently has an undulating surface, but is smooth. It splits readily, and is used for purposes similar to those of gneiss. Garnets are more abundant in this than any other rock; and this rock contains more of those than any other crystals.

No. 10.—Hornblende is black, green, or other dark colors. It is more tough than hard, and is an element of rocks much used in architecture, also forming some of the most beautiful scenery in the world.

No. 11.—Sienite is commonly called granite, but differs from it in taking hornblende in place of mica. The Bunker Hill Monument, (Massachusetts,) Merchants' Exchange, Astor House, and numerous other buildings, in New York and other cities, are built of sienite, commonly called Quincy granite. Cleopatra's Needle, Egypt, is Sienite.

No. 12.—Basalt. The Giant's Causeway is composed of basaltic pillars, many of which are six-sided prisms, from six inches to a foot or two in diameter, in blocks about the same length, with one end rounded and the other hollowed, so as exactly to match, and are piled upon each other to the height of 200 feet or more. Rocks nearly resembling these, and piled upon each other in a similar manner, form the Palisades on the Hudson, the two bluffs at New Haven, Mount Holyoke, and many other mountain masses in this and other countries. The same kind of rock is scattered over many countries, in the form of boulders, and is frequently known by the name of ironstone. It is composed principally of hornblende or augite, which it resembles, and felspar, with a large portion of iron. Basalt, green-
stone, and other rocks of the same family, are much used for building.

Nos. 13 and 14. — *Lime* formations are extensive, various, useful, and sometimes beautiful. They embrace common limestone, nearly all marbles, chalk, and many beautiful crystals. The older formations are in coarse grains, which give it the name of granular lime. The more recent is frequently finer or more compact, when it is called compact lime. It is frequently found in rhombic crystals, when it is called rhomb spar. When these crystals are transparent, they are called Iceland spar, and produce double refraction; giving one line or letter seen through it the appearance of two.

All these formations are the carbonate of lime, composed of lime and carbonic acid. When burnt, the acid is thrown from the lime, when it is, reduced to quicklime, and fitted for various uses in building; also for manuring land, for which it is extensively used. White limestone and milk quartz are sometimes confounded; but they may be easily distinguished by the knife, as the former can be cut, and the latter not; and more certainly by an acid, as the former effervesces, and the latter not.

No. 15.—*Gypsum* is the sulphate of lime, and of course composed of sulphuric acid, (oil of vitriol,) and lime. In Italy and other countries, it appears in the form of alabaster, which receives a fine polish, and is translucent. When crystallized in transparent plates, it is called selenite (moonstone). It sometimes appears in fine silky fibres, when it is called fibrous gypsum. Radiated gypsum is another beautiful variety of this mineral.

Gypsum is a powerful manure, and is much used for ornamental work in plastering rooms; also for busts and casts of various kinds.

No. 16.—*Serpentine* rock forms extensive barren ridges, but contains chrome ore, magnesia, asbestos, and other useful and curious deposits. It takes its name from its variety of colors like the serpent, though its usual color is green. The prevailing rock at Hoboken and Staten Island is serpentine, which extends, with frequent interruptions, through New Jersey, Pennsylvania, and Maryland, into Virginia. It abounds in various parts of the world.
No. 17. — *Talc*, like serpentine, contains magnesia. It is sometimes known by the name of French chalk. It has a greasy feel, and is easily cut with a knife, or scratched by the fingernail.

No. 18. — *Soapstone* is composed of talc, minutely combined with quartz. It is easily cut with an axe or saw, turned in a lathe, smoothed with a plane, and thus changed into any form desired for economy or convenience. It is less abundant than serpentine, but is frequently found with it.

No. 19. — *Sandstone* is composed of grains of sand or quartz cemented into rocks, commonly by iron. It abounds in many countries, and is much used for buildings, and is the material used for grindstones, whetstones, and other similar articles.

No. 20. — *Puddingstone* is a rock formed of pebbles, and cemented by iron. The pebbles are commonly quartz, rounded by a long course of friction. When the pebbles are limestone, not rounded, the rock is called breccia.

Nos. 21 and 22. — *Coal*. Mineral coal is divided into two great families — bituminous and anthracite. The former contains hydrogen, which produces ready ignition, a bright blaze, smoke, smell, tar, and coke. Anthracite is composed principally of carbon, which is ignited less readily, produces little blaze, smoke, or smell, no tar nor coke, but a higher heat, and is more durable. Bituminous coal is found in Pennsylvania, Ohio, Illinois, Missouri, Tennessee, Alabama, and other States. Nearly all the anthracite used comes from Pennsylvania. Both are found in various parts of the other continent.

No. 23. — *Fossils*. More than 9,000 different kinds of animals are changed into stone, or petrified; the greater portion of the species now extinct, or unknown in a living state. Some animals thus petrified were larger than elephants; others are microscopic, or too small to be seen by the eye alone. Microscopic animals thus fossilized, and now forming chalk, flint, marl, &c., were once alive, and possessed of the powers of action and enjoyment. One fossil, called the lily encrinite, or stone lily, is found to contain more than 100,000 bones or joints. On some portions of the Erie canal, rocks composed of different kinds of encrinites are so abundant as to be used for the walls of locks. They receive a fine polish, and make a beautiful marble.
Six hundred different kinds of fossil or petrified plants, have been discovered. In some cases, large trees, and even forests, are changed into stone. Many kinds of plants, especially ferns, are found in slate and other rocks about coal-mines.

No. 24. — *Coral.* Myriads of insects have been at work for thousands of years, in forming rocks and islands in many parts of the world. They have built from the depths of the sea large masses and ranges of rocks, many thousand miles in extent. Their work is generally in a circular form, frequently surrounding islands. They leave openings sufficient for ships to enter, and space enough between their work and the islands for a safe harbor to ships when entered. The rock thus formed is called coral; the ranges encircling islands, coral reefs; and the insects engaged in the work, coral insects; of which, numerous kinds are known, but are all small.

No. 25. — *Lava.* A volcano is a burning mountain. More than three hundred have been discovered upon the earth. Some of them are constantly throwing out fire, smoke, ashes, and melted rocks; others burn for a time, and then cease, or perhaps break out in a new place. Some of these volcanoes have thrown out masses of melted matter, which has passed off in streams to the surrounding country, covering a surface larger than some of our States. The matter thus thrown from volcanoes is called lava; and the hole or opening from which it is thrown, is called a crater. The highest volcano is in the Andes mountains, more than 17,000 feet high, which sometimes throws out matter 6,000 feet above its summit. In some cases, the quantity of matter thrown from a volcano is greater than the whole mass of the mountain from which it is thrown. In 1783, two streams of lava flowed from a volcano in Iceland, one fifty miles long and twelve broad, and the other forty miles by seven — averaging one hundred feet in thickness, destroying twenty villages, and 9,000 inhabitants. Most of the islands in the Pacific ocean, and many in other parts of the world, are volcanos. Some islands have risen from the midst of the sea, in modern times, by the power of volcanos.
WESTRUP'S PATENT FLOUR-MILL.

[The following "Report of the Proceedings in a Scientific Examination of Manufacturing Flour by the ordinary Mills and by the newly-invented Conical Mill," is extracted from the "Mark-Lane (London) Express," of Feb. 21, 1853.]

An invention which is likely to effect a complete revolution in the erection of all future mills, and which was frequently brought forward while in its chrysalis state as a model in the Great Exhibition, has been matured, and is now, and has been for the last two months, at full and daily work at the Anchor Flour Mills of the Messrs. Pavitt, Wapping. Being proved to be complete in all respects, and tested by long-continued work, and the flour made from it preferred by the bakers who had tried it, to the other flour they had previously purchased, it was determined to throw the works open to all who desired to inspect them in practical operation, and to compare the results with the working of one of the best ordinary mills in London on the same premises. Accordingly the following card was issued to many scientific gentlemen, and to the editors of all the metropolitan newspapers and journals connected with commerce or agriculture:

"Patent Flour Mill, at Messrs. Pavitt's, 247, Wapping. —The scientific examination of this most important invention will take place on Wednesday, the 9th day of February, at two o'clock, at which the editor and friend or friends are respectfully invited to be present. Lord Beaumont and Sir J. V. Shelley, Bart., stated to the two Houses of Parliament, in a petition, asking for inquiry and adoption, that by this invention 81,857,120 quarter loaves, in addition to those that are made from the same quantity of wheat, would be produced, giving a clear saving of upwards of £2,000,000 per annum. Also, that it effected an economy of time and labor of cent. per cent., while it produced a better and healthier article than the flour usually sold, lasting
longer, being stronger, and not liable to become sour and un-wholesome, possessing in color all the advantages of Parisian flour. Since then, the mill to be inspected has been grinding against the ordinary mill on the same premises, day by day for many weeks, and it is proposed to exhibit both in operation, and the results of each. Several bakers are prepared to testify to the great advantage of the patented system over the ordinary system, both in better bread for the public, and greater profits for themselves. Mills are now erected, or in the course of erection, in France, Belgium, Austria, and Mexico, under the patents of this invention."

As we prefer on all matters of science that journals connected with science should be adopted as the authorities, instead of giving our own report, we shall extract one from the Mechanic's Magazine of the 12th inst.

"On Wednesday morning, the 9th inst., a large party of engineering gentlemen, and of others engaged in an extensive way of business, as millers, assembled at the well-known flour-mills of the Messrs. Pavitt, High-street, Wapping, to witness the performance of two mills constructed by Mr. Middleton, on the principle of Westrup's Patent. In the same establishment are seven other mills of the ordinary construction, and the trial of relative merits was between the two conical and the most effective pair of the flat mills. The result, as will be seen, proved to be immensely in favor of the conical system; while the quality of the article produced, according to the opinion of experienced bakers, is far superior. The economy of this new system of grinding is found to effect very sensibly the detail of operations both in the mill and in the bake-house. In the former, it becomes possible to grind up a large portion of farinaceous matter now rejected in the form of a bran; that is, to exhaust the husk of the clavel more completely, and therefore to yield a larger quantity of pure farina. In the latter, the tedious but critical duty of watching for what is technically termed 'the sponge,' or rising of the dough, is quite superseded. At present, if this be neglected, the dough falls again in the oven, and the bread is sold at a reduced price, which is a serious disadvantage.

"Under the conical system of grinding, in consequence of the greater proportion of gluten contained in the mass, the acids
do not escape so rapidly, and the sponge takes place in the oven.

"Upon the whole, there is a large gain to the public; for besides a saving in fuel, it is capable of increasing the bread of the people to the value of £2,460,428 a-year, which at 6d. per loaf, would give them 81,857,120 more quaterm loaves a year.

"The old flat flour-mill ordinarily consists of a lower fixed circular stone, and an upper revolving one, each of about 4 feet 6 inches in diameter. The wheat being introduced through an aperture, is drawn in, and ground between the revolving and the fixed dressed surfaces. The average weight of these stones is about 14 cwt., and it is ordinarily found that the grinding surface presented is so extended as to render the delivery of the flour extremely slow and uncertain, notwithstanding the great velocity of the running-stone, which is generally 120 revolutions per minute. The evil arising from this circumstance is, that the flour, finding only a partial escape, is triturated and re-triturated, to the great ultimate injury of the meal.

"Some idea of the power required to keep such massive machines in operation, may be gathered from the fact, that a single pair of stones, 4 feet in diameter, require the power of a four-horse engine to maintain the needful speed. This enormous power becomes necessary, in consequence of the great weight of the 'top stone,' the rapid rate of revolution, and the very large amount of friction produced by the process of grinding so glutinous a substance as meal between such extended surfaces.

"These are the principal objections to the old flat-mill system of grinding, which has been the universal one in use in all parts of the kingdom for a considerable time; the only variation in practice consisting in the motive-power. Most commonly steam-power is employed, but when the locality admits of its introduction, the cheaper, and more uniformly certain agent, water, has been brought into action. In all other respects, the mechanical detail of the system has been uniformly the same.

"The 'conical' mill is intended to obviate these defects; and a very few remarks will suffice to show that its inventor has not only detected their causes, but has brought into operation a most philosophic, and therefore successful, combination of grinding and separating agencies, by which these defects have disappeared
to an extent which leaves little to be desired. The beneficial changes effected may be succinctly enumerated. First, the reduction of the weight of the running-stone from 14 cwt. to $\frac{1}{2}$ cwt., by placing it beneath instead of upon the fixed one; second, the reduction of the size of the stones in the proportion of 3.34 to 1; and thirdly, the giving to the stones a new form—that of the frustum of a cone. The advantage of lessening the diameter and weight of a mass, of which the one is 4 cwt. and the other 14 cwt., will be apparent, when it is considered that its effective velocity is 120 revolutions per minute, and that this velocity must be sustained against the enormous friction of the grinding surfaces. The altered position of the running-stone admits of a much more delicate adjustment of the opposing surfaces, and gives to the miller an easy and effective control over the most important portion of his operation. The conical form facilitates the discharge of the flour, and obviates the clogging and overheating of the old practice. In addition to these advantages, by a judicious modification of the ordinary mode of dressing, or rather by a combination of the mill with the dressing machine, a perfect separation of the flour from the bran is effected at the moment the grist escapes from the stones. The bran still remains in the mill, and falls by its own gravity to a second pair of stones in all respects resembling those already described.

"Both pairs of stones are mounted upon the same spindle, and of course impelled by the same gearing. The operation of the lower pair need not be described; they complete the process, and leave nothing unconverted into flour—which could add either to the weight or the quality of the loaf. In considering this arrangement, we cannot fail to be struck with the analogy subsisting between it and that which we observe in the construction of the jaws of animals—a circumstance which assures us of its philosophical superiority.

"There were three trials as regarded the old system and the new. The first experiment on the old mill gave a discharge of 16 lbs. of flour in five minutes, which was equal to 192 lbs. per hour; while upon the patent mill there was a discharge of $38\frac{1}{2}$ lbs. in five minutes, or 462 lbs. per hour. The difference, therefore, on that experiment, was, against the old system, 270 lbs. per
hour. The second experiment tried was even more favorable as regarded the new system.

"Two conical mills, worked against two on the flat principle for an hour, ascertained exactly, and with the following results:

Conical mill (No. 1) produced 8\(\frac{3}{4}\) bushels.
Ditto (No. 2) " 7\(\frac{3}{4}\) "
Flat mill (No. 1) " 3 "
Ditto (No. 2) " 3 "

The Morning Herald and the Standard, in their reports, state that, "by Mr. Westrup's invention, two stones used for the purposes of grinding do the work of four under the present existing or old system, with the same power, the steam-power, (an engine of 26-horse power,) being at a pressure of 44 to the square inch. Whether the motive power be that of water, steam, or wind, the result is the same. The saving of friction under this new discovery is marvellous. By the old system, every time the engine stops the men are obliged to raise the stones, and a large amount of 'offal' is sacrificed. By this new discovery, there is no necessity to remove the stones; there is no alteration in them from week to week. By the stopping of the operation of the stones, and clearing them, there is a loss of at least 1s. per quarter. In this case, there is no loss of the kind. Some experiments followed, to test the superiority of Mr. Westrup's invention, as opposed to some admirable machines used by Messrs. Pavitt, of 247, Wapping. The first experiment, of five minutes, gave a yield of 38\(\frac{3}{4}\) lbs. in favor of Mr. Westrup's discovery, after deducting 7\(\frac{3}{4}\) lbs. for the weight of the measure, or 462 lbs. per hour of flour ground. By the process now adopted, the yield was net 15 lbs., as against 38\(\frac{3}{4}\) lbs. A second experiment was tried, which gave a net weight of 43\(\frac{1}{2}\) lbs. in five minutes, or 8 bushels 42 lbs. in an hour, as against another mill, which yielded, as in the former case, only 15 lbs. again. So that the flour ground, on the whole, was nearly three times as much as that ground under the existing principle. The yield of flour under this process is enormous, giving to the baker as much as from four to eight or ten loaves in a sack above what is usually produced. The flour ground is done in less than half the time occupied by
the original process, and the saving of 'offal' is enormous. Bakers, growers, and millers are all deeply interested in this great discovery, which practically gives vast benefits to the humble and middle classes. We heartily wish the patentee every success; and we cannot doubt that success will be the result of his labors, seeing that he is supported by some wealthy and intelligent men."

The *Morning Advertiser* of the 10th inst., in addition, observes: "There was a number of scientific gentlemen present observing the working of the mill. Among these was the miller of Sir John Villiers Shelley, the member of Parliament for Westminster, and who was so much taken with the invention that he was erecting a mill on the same principle on his own estate in Sussex. It was also stated that the wheat ground at such a mill, from the waste it would obviate, would be the means of reducing the price of bread, as well as curtailing the manual labor of those who prepared the bread for the public. During these experiments, there were several scientific gentlemen present. Among others, we observed Mr. Stevens, the talented architect for the Corporation of the City of London, who seemed to feel much interest in the new invention, and expressed his confident opinion as to its success. The whole of those gentlemen who witnessed the exhibition expressed a similar opinion, and there is no doubt but that it will now become a great fact on the community."

The *Morning Post* of the same day prefaces a very long report by observing: "There is a proverb that 'There is nothing new under the sun,' in which we have been long disposed to place considerable faith; but it would appear, from an invention which we were invited to view yesterday, that even he who was considered the wisest of men might be mistaken, as a method of grinding corn, which has been in use from the days of the Israelites to the present, appears about to be superseded by an invention, which, while it returns a much larger quantity of flour for the corn ground, also effects a great economy in the time employed. The experiments with the new mill, which we were invited to view yesterday, took place at Messrs. Pavitt's, Highstreet, Wapping, extensive millers in London. The Messrs. Pavitt have hitherto had nine pair of stones at work on the old principle, by a steam-engine of 26-horse power, working at a
pressure of 44 lbs. on the inch. Recently, however, they have allowed two of the conical mills to be erected, and the results of the working have so far proved the great superiority of the new system—the work done being double that of the old system—the return from the wheat 10 or 15 per cent. more—and the quality of the flour made superior to any hitherto obtained—at least, such is the report of Messrs. Pavitt and more than one of their customers. Indeed, the Messrs. Pavitt declare that they were in the first instance sceptical as to the success of the invention, but that they are now prepared to go 'the whole hog' in carrying it out. Flour was drawn from the hoppers of the new and the old mills, five minutes being the time taken for the test, and in the first instance the comparison stood as 28½ lbs. against 15 in favor of the new system; and in the second, taken from other hoppers, as 43½ lbs. against 15, or nearly three to one. We need not trouble ourselves to enter into a calculation of what the difference would be by the hour, the day, or the year—the proportion being all that can interest our readers. We are informed that the stones, under the new system, will continue at work without removal ten or twelve days; whilst, under the old, they required lifting or a stoppage of the machinery two or three times a day—a loss of 1s. per pair of stones being incurred by every such stoppage."

The Morning Chronicle, the Daily News, and the Globe, of the 10th instant, give similar reports, with at least equally laudatory observations.

The Patriot, the organ of the Dissenters, in concluding its report says: "Having paid close attention to the experiments, and narrowly inspected their mechanism, we are able to affirm the vast superiority of the new mill, both as to the quantity of work done and in the manner of doing it."

The Era of the 13th inst., besides giving a report, observes: "It is to be hoped that at length the true principle of grinding flour has been discovered. Mr. Westrup, a most intelligent man, has very ingeniously carried out what may be called the natural principles, and his patent-mill, now in operation at Messrs. Pavitt's, afforded us an opportunity of witnessing the proof of the fact that the great object has been achieved. Mr. Westrup's invention, we may state by way of preliminary, elicited the
warmest approbation of Prince Albert and a number of intelligent judges of the trade identified with the corn and flour market, millers, bakers, &c., at the period of the Exhibition. The conical mills we regard as a triumph in science of a great character. One great fact is specially to be noticed. The quality of the flour is materially improved, and the quantity increased. We anticipate the conical mill will work a great revolution in favor of the bread consumers, and we give our cordial support to the ingenious inventor and the company working it."

Bell's Weekly Messenger of last Monday says: "A few days since a scientific examination of Westrup's patent flour-mill took place in the presence of a large company. Mr. Westrup reduces the grinding surface of his stones to about seven inches; and instead of retaining the flour until it is liberated by actual pressure, he allows it to fall on a second set of stones by its own gravity, and thence it is delivered by one instead of a hundred revolutions. The stones, which are about one-fifth the weight, do not wear out like the old ones, and the mill accomplishes more than double the amount of work with the same motive power. The quality of the flour is also better; and a practical baker present on the occasion stated that, from a quarter of corn ground by the patent method, he could make 120 loaves as against 96 by the ordinary process. The conical mill also produces a flour from some of the cheaper wheats as strong as can be obtained from many of the dear foreign wheats, and the bran is produced perfectly open and clean. Another important point is this—that the arrangements for adjusting the relative distances of the stones from each other are much more complete, admitting of a nicety hitherto unknown. Millers now calculate that whenever they shut off the mill, as the stopping it is technically termed, they lose a shilling, and this happens necessarily three times a day; but by the patent mill, if they stopped it ten times a day, they would not lose a penny, as the mill will work ten days or a fortnight without readjustment. We advise all our friends who are interested in the subject to examine for themselves the working of this ingenious yet simple contrivance."

Other journals have also expressed very strong opinions in favor of the new system, and not a single organ of public opinion has ventured to

"Hint a doubt, or hesitate dislike."
ON THE SOILING OF CATTLE.

BY HON. JOSIAH QUINCY, SENIOR, OF MASSACHUSETTS.

To the Trustees of the Norfolk Agricultural Society:

Gentlemen—In conformity with your request, I proceed to state "my experience, practice, and views," on the subject of soiling; by which I understand the keeping cattle in the barn and feeding them with green food during the summer months, allowing them, daily, only a few hours' liberty of a yard, instead of feeding them in pastures. I do not, however, expect to communicate anything which may not easily be gathered from European writers; knowing, also, the great proportion of land in the State thought to be exclusively applicable to pasturage, I do not anticipate that any statement on the topic can be generally useful. Yet, to those farmers who have no land which may not easily be subjected to the plough, and to that increasing class who possess only ten, fifteen, or twenty acres of land, the system is very important, and a knowledge of my "experience and practice" may be useful; I, therefore, comply with your request.

Between the years 1813 and 1821, I managed my farm, according to my own judgment, with satisfactory success. My attention was early drawn to the subject of soiling milch cows, in the summer season, instead of keeping them in pasture, from the following circumstances. My farm consisted of about one hundred and seventy acres of good loam, level, without stone, almost every square foot of which might be easily made subject to the plough, with the exception of about twenty acres, which was salt marsh. Nearly half of it had been always applied to pasture, and had upon it, by estimate, four or five miles of interior fence, which could not have cost, originally, less than sixteen hundred dollars, and being post and rail, annually cost about sixty dollars in repairs. My farm being compact, the annoyance of having fifteen or twenty head of cattle driven night and morning to and from pasture, the loss of time in turning the plough, owing to the number of interior fences, and the loss
of surface capable of being submitted to the plough, owing to
the many headlands, all drew my attention to the subject of
soiling and its effects.

I found that European writers maintained that six distinct
advantages were to be attained by the practice of soiling over
that of pasturing cattle in the summer season.

1. It saved land.
2. It saved fencing.
3. It economized food.
4. It kept the cattle in better condition and greater comfort.
5. It produced more milk.
6. It increased, immensely, the quantity and quality of the
manure.

Satisfied, in my own mind, of the beneficial effects of the
practice, I adopted it in the year 1815, and adhered to it until
the year 1822, keeping from fifteen to twenty head of milch cows
with such satisfactory success, that in the years 1820 and 1821,
at the request of the Trustees of the Massachusetts Society for
Promoting Agriculture, I published in their Repository two
Essays entitled "Remarks on Soiling," and which may be found
in vol. vi. pages 113-125, and in pages 334-348 of that publi-
cation. In the year 1822, I gave up the direct management of
my farm and leased it, from considerations wholly independent
of any dissatisfaction with this practice or its results.

From that time, being occupied in various public offices in
Boston and its vicinity, I exercised no superintendence of my
farm for about twenty-five years. Resuming its management in
1847, I immediately returned to the practice of soiling, resorted
to the Essays I had formerly published, to revive my knowledge
on the subject, and from that time to the present have perse-
ered in the practice with such entire satisfaction that no consi-
deration would induce me to adopt any other. Since 1847, I
have kept from thirty to thirty-five head of milch cows in this
way, so that, in my mind, my experience is conclusive on the
subject.

Every one of the advantages above stated, as being main-
tained by European writers, I have realized.

1. As to saving of land. *One* acre soiled from will produce
as much as *three* acres pastured. This is enough, although some
European writers assert the benefit is equal to one to seven;—this great difference arising from the mode in which the one acre is cultivated and enriched for succulent products.

2. As to saving of fencing, it renders all interior fences useless. It enables the plough to pass through any length of land without turning, and saves all waste from headlands, which on each side of fences are usually the receptacles of unsightly and noxious weeds.

3. As to economy of food, cattle will eat in the stall what they will reject in the field. They tread down and injure in the pasture, by dung or by stale, grass as good and almost in equal quantities with that which they consume, and by their feet injure its present product and future productive power.

4. As to the better condition and greater comfort of the cattle, in the stall they are supplied every day, five or six times, with food given regularly in sufficient quantity. And previous preparation having been made, they can never fail, let the season be what it will, of always having the best food and enough. When kept in the pasture they are left to their own care, subject to various accidents, to the ill effects produced by worrying one another, and to the constantly varying state of the pasture, which is always affected by drought and by the proportion of the number pastured, to the productive power of the field, which is often overstocked. In stall feeding, care having been taken to have sufficient succulent food prepared, they are, in as great a degree as is possible, kept independent of the variations of season and from other annoyances. Their greater comfort, in this mode of keeping, is one of the essential causes of their better condition. During the heat of the day, they are kept under cover in the shade, secured from flies, from being worried by dogs or one another, from eating any noxious vegetables, and from bad water.

A popular objection to this mode of keeping milch cows, is, that want of exercise must affect injuriously the health of the animal. To this, European writers, some of whom have kept in this way large herds, reply, that they "never had one sick, or one die, or one miscarry," in consequence of this mode of keeping. After more than eight years' pursuance of the same practice, my experience justifies me in uniting my testimony to theirs on this point.
Another commonplace objection to this practice in respect to milch cows, is, that their "milk cannot be so good nor in so great quantities, for want of exercise." Nothing can have less foundation in fact. Cows, in the pasture, unless under some temporary excitement, use very little—comparatively, no exercise. They usually walk a short time, slowly, collect their food, and lie down to ruminate. The difference between this habit of theirs and the exercise obtained by walking about an hour or two hours in the day in a yard, and being employed in rubbing themselves against walls or posts, is little, if any, less than they get in the pasture. This exercise, (a daily, thorough currying being added in their stalls,) is quite as efficient to produce a healthful action of the system as any exercise, as it is called, in the pasture.

5. As to the quantity of milk produced by this mode of keeping, my own experience, is, in my opinion, decisive in its favor. In early summer, and when pastures are fresh in grass, milk will be, for a short period, produced in somewhat greater quantities by keeping in pasture than by soiling. But this advantage is of very short duration. As soon as pastures grow short, and the annoyance of heat and flies commences, all the advantage is transferred to stall feeding. By comparison of the result of my milk produced, with that of my neighbors, taking both parts of the summer season together, I am entirely satisfied that the product, by well-conducted soiling, is greatly in favor of this process.

6. As to the great increase in the quantity and quality of the manure, there can be possibly no question on the subject. Proper receptacles for this article being provided, free from rain and the sun, into which the stale from the cattle may be also received, the quantity and increased value of the manure thus kept, is, according to my experience, a full equivalent for all the labor and expense of raising, cutting, and bringing in the food, feeding, currying, and other care of the cattle. No farmer need be told of the importance and absolute necessity of manure for successful farming, and to those who have not the means of purchasing that article, the mode of soiling is of all others the most certainly productive of it, both in quantity and quality.

As to my practice in soiling, it relates, 1st. To the quantity
of land to be cultivated for the purpose of preparing succulent food; 2d. To the particular articles to be thus cultivated; and 3d. To the times they are to be sown, so as to effect a regular succession of such food.

1. As to the quantity of land to be cultivated. According to my experience, one square rod of land, of rich loam in high tilth in grass, oats, barley or Indian corn, is enough for the support of a cow a day, if cut and delivered to her in the barn. As, however, there is a great difference in the state of land and in its productive power, and as it is important there should be no failure in succulent food, my practice has been to cultivate one and a half square rods of land per day for each head of cattle I intend to soil. And on this basis I make my calculations in the spring of the year; for the quantity to be sown, at every succeeding period, when, to secure a regular succession of such food, a new sowing is required. To make this calculation sufficiently exact, the length of time it will take the article sown to come to maturity so as to be fit to cut, and the length of time it will afterwards continue succulent, are to be considered. The time it comes to such a state of maturity, is, of course, the time at which it may be relied upon for soiling. A like reliance may be placed on the time it will continue succulent. The general knowledge of practical farmers and experience will easily give information on both points.

If any article sown in the spring will come to maturity on the first of July, and will continue succulent ten days, fifteen square rods of succulent food will be wanted for each cow soiled; one cow will, therefore, consume fifteen square rods during that period, and ten cows will require one hundred and sixty rods, or about an acre of such food for their support. On this basis of calculation I have always found the number of square rods to be sowed; for such a period of succulency of the plant is sufficient for about such a period of feeding, viz. ten days. On this calculation I have safely soiled from thirty to thirty-five head of cattle, adding one acre of preparation for every ten head.

Should any one, however, adopt this practice for the first time, I should advise the preparing two square rods for each cow, to guard against every contingency to which a first attempt may be liable. For nothing will be lost if the food should prove more
than was required. The surplus becomes a resource for the winter keeping, after it is too rank for soiling.

2. As to the particular articles to be thus cultivated, I have tried many besides those above-mentioned, such as millet, lucerne, cabbages, peas, the tops of carrots, beets, or turnips. Each may be usefully applied in its proper season, particularly the last three. And whoever keeps milch cows will find roots an important auxiliary for milk in the winter season, and, of course, will find their tops a like important aid to soiling in the latter months of autumn. But I think it best to enumerate only the fewest, the simplest, and the best known to all farmers of the articles, which, from experience, I have found the surest and the best to be relied upon for a successful conduct of the system. These are those already enumerated—oats, barley, and Indian corn—sown broadcast or in drills, for fodder.

3. The time in which the above articles are to be sown. The usual period in this country for turning out cows to pasture is from the 20th of May to the 1st of June. Antecedent to this period, no succulent food can be obtained for soiling. Preparation, however, may be made the autumn previous by sowing winter rye, according to the proportion required for soiling, from the 10th or 15th of the month of May to the 1st of June. This could be done with advantage, but I have never practised it more than once; because, although I have always had rye fit for cutting at this time, yet it is too valuable, as grain and straw, for me so to use it—regarding as I do winter rye, at the usual prices of grain and straw in this vicinity, to be the most profitable of any grain product.

The reliance, in the soiling system, for succulent food between the 20th of May and the 1st of July, is grass, cut and delivered in the stable; and, according to my experience, one and a half square rods per day for each cow soiled is ample for this purpose. The grass thus cut was usually that which is the least likely to be preferable for winter keep, such as that growing by the side of my farm roads, or under trees, or that having the rankest fibre.

The food sown and cultivated for soiling, in this climate, must have exclusive reference to the summer and autumn months, commencing with the 1st of July. And the following is the
order of sowing, according to my practice, justified by experience, the proportion of land sowed at each successive period being, as above stated, one and a half, or two square rods per day, for each cow soiled. To produce a sufficient quantity of succession of succulent food, sow—

1. As early in April as the state of the land will permit, which is usually between the 5th and the 10th on properly prepared land—oats, at the rate of four bushels to the acre.

2. About the 20th of the same month, sow either oats or barley, at the same rate per acre, in like quantity and proportions.

3. Early in May, sow in like manner either of the above grains.

4. Between the 10th and 15th of May, sow Indian corn, (the flat Southern being the best,) in drills, three bushels to the acre, in like quantity and proportions.

5. About the 25th of May, sow corn in like quantity and proportions.

6. About the 5th of June, repeat the sowing of corn.

7. After the last-mentioned sowing, barley should be sown in the above-mentioned quantity and proportions, in succession, on the 15th and 25th of June, and on the 1st of, or early in, July, barley being the best qualified to resist the early frosts.

The results of the above sowing, in succulent food, may be expected to be as follows, seasons of extraordinary drought excepted:—

The oats sowed early in April will be ready to be cut for soil ing between the 1st and 5th of July, and will usually remain succulent until the 12th or 15th of that month.

Those sowed about the 20th of April will be ready to cut between the 15th and 20th of July, and will last nearly or quite till the 1st of August.

Those sowed early in May will be ready to succeed the preceding, and last till about the 10th of August.

The corn sown on the 10th and 25th of May, and early in June, will supply, in succession, succulent food of the best quality, until early in September.

The barley sown in July will continue a sufficient supply until early in November; at which time, and often before, the
tops of roots, carrots, beets, or turnips, are a never-failing resource.

In the above enumeration of articles to effect a succession of succulent food for soiling, I have carefully confined myself to those which were the fewest and the most commonly known. I have also stated their succession in point of sowing and use, as if no other articles could be brought in aid, for the purpose that there may be no disappointment. Whereas, in the latter end of July, and in August, second-crop grass may be generally relied upon, and in September and October, the tops of roots, as above mentioned, and of Indian corn, are also a reliable resource.

I have also stated a succession of sowings, which my experience has shown to be full and sufficient, and which, if the quantity sowed should be equal to two square-rods for each cow soiled, per day, will certainly be more than sufficient for summer soiling; but as before stated, if there should be excess, nothing is lost, as it becomes a resource for winter food for cattle.

I cannot close this communication, without remarking upon the importance of this system, and of its being known and understood. Nothing seems less realized than the productive power of the soil, when it is good, arable, and well cultivated. A man hardly dares call himself, in our country, a farmer, unless he has thirty, forty, or fifty acres. If he has ten, fifteen, or twenty, he aspires only to the character of a gardener; but as to keeping any number of cattle beyond what is wanted for his own family use, he generally regards it wholly out of the question. Now there is in our country no class of men whom it is more desirable to encourage and instruct in the actual productive power of the quantity of land they possess, than these ten, fifteen or twenty-acre men. As this class multiplies, as it must, it will become a most important element in preserving and perpetuating conservative principles in our institutions. The consciousness of an identity of interest between the small and the great landholder, is, in a republic, one of the strongest bonds of its continuance and happiness. A practical knowledge of the productive power of the soil, and of the mode of making its yield the most, will not only create in them content, but will prevent them from running into debt for more land; a practice, of all others, the most embarrassing and ruinous to this
class of farmers. That they may obtain distinct and practical knowledge of the mode of operating on a small scale, on this system, I state that I have known two head of milch cows kept in full milk and high condition through the whole summer season on one acre of land, and some food from it left for winter use. To obtain the requisite succession of green food, one-quarter of an acre was sown in articles herein already stated, early in April, another quarter about fifteen days after the first, and so the remaining two-quarters in similar succession.

The first sown will be in a state to be used in soiling about the 1st of July, until which time, grass cut and brought to the stable is the reliance. From the 1st to the 15th of July, the food obtained from the first quarter of an acre will be usually a full supply. As soon as this quarter of an acre is fed off, it is to be well manured — of which the cattle will have afforded an abundance — ploughed, or spaded, and the articles above stated, sowed and rolled in. The same process is to be pursued in respect to every succeeding quarter of an acre, as soon as it is fed off, as long as the season will permit an expectation of a crop from such sowing.

Of course, a farmer upon such a small scale, will have roots of some kind, carrots, beets, turnips, or cabbages, for winter supply, which will come in aid of the food of the one acre, to such a degree that the articles sown upon it will become also in part a reserve for winter supply. I have stated that two cows may thus be kept on one acre during the summer season, because I know the trial has been made with complete success by another individual; but from my own experience, I do not hesitate to state that three cows may thus be kept in full milk and in high condition on a single acre. Whoever commences the system, should begin on a small scale. Experience will show the way to success. The great profit of the system is the abundance of manure which it insures, of the best quality, at the cheapest rate. The importance of manure to successful husbandry, it is not for me to explain. Whoever has no funds to purchase it, will find no mode so sure, so cheap, and so easy to obtain it, as the system of soiling.
CULTIVATION BY SEWER AND LIQUID MANURES;

BEING A LETTER TO THE LONDON GENERAL BOARD OF HEALTH, DESCRIPTIVE OF THE PRACTICE IN ENGLAND AND SCOTLAND.

BY THE HON. DUDLEY F. FORTESCUE.

My Lords and Gentlemen:

Having been requested by one of the Members of your Board, my friend Mr. Chadwick, to aid him in further investigating some of the agricultural results of the application of liquid manure which the pressure of the engagements of the Board prevented him from examining for himself, I had much pleasure in devoting a portion of my leisure this year to that object. Of a visit I made in his company, together with Mr. Ranger, Mr. Rawlinson, and Mr. Rammell, three of your Engineering Inspectors, to some of the more recent and important examples in Scotland of the application of sewer water and of the distribution of farm manure in the liquid form, I beg to present to you the following details.

The first farm we visited was that of Craigentinney, situated about one mile and a half south-east of Edinburgh, of which 260 Scotch* acres receive a considerable proportion of such sewerage, as, under an imperfect system of house drainage, is at present derived from half the city. The meadows of which it chiefly consists have been put under irrigation at various times, the most recent addition being nearly 50 acres laid out in the course of last year and the year previous, which lying above the level of the rest are irrigated by means of a steam-engine. The meadows first laid out are watered by contour channels following the inequalities of the ground, after the fashion commonly adopted in Devonshire; but in the more recent parts the ground is disposed in "panes" of half an acre, served by their respective

* One-fourth more than the English acre.
feeders, a plan which, though somewhat more expensive at the outset, is found preferable in practice. The whole 260 acres take about 14 days to irrigate; the men charged with the duty of shifting the water from one pane to another give to each plot about two hours' irrigation at a time; and the engine serves its 50 acres in 10 days, working day and night, and employing one man at the engine and another to shift the water. The produce of the meadows is sold by auction on the ground, "rouped" as it is termed, to the cow-feeders of Edinburgh, the purchaser cutting and carrying off all he can during the course of the letting, which extends from about the middle of April to October, when the meadows are shut up; but the irrigation is continued through the winter. The lettings average somewhat over £20 the acre; the highest last year having brought £31 and the lowest £9; these last were of very limited extent, on land recently denuded in laying out the ground, and consequently much below its natural level of productiveness. There are four cuttings in the year, and the collective weight of grass cut in parts was stated at the extraordinary amount of 80 tons the imperial acre. The only cost of maintaining these meadows, except those to which the water is pumped by the engine, consists in the employment of two hands to turn on and off the water, and in the expense of clearing out the channels, which was contracted for last year at £29, and the value of the refuse obtained was considered fully equal to that sum, being applied in manuring parts of the land for a crop of turnips, which, with only this dressing in addition to irrigation with the sewage water, presented the most luxuriant appearance. The crop, from present indications, was estimated at from 30 to 40 tons the acre, and was expected to realize 15s. the ton sold on the land. From calculations made on the spot, we estimated the produce of the meadows during the eight months of cutting at the keep of 10 cows per acre, exclusive of the distillery refuse they consume in addition, at a cost of 1s. to 1s. 6d. per head per week. The sea-meadows present a particularly striking example of the effects of the irrigation; these, comprising between 20 and 30 acres skirting the shore between Leith and Musselburgh, were laid down in 1826, at a cost of about £700; the land consisted formerly of a bare sandy tract, yielding almost absolutely nothing; it is now
covered with luxuriant vegetation extending close down to high-water mark, and lets at an average of £20 per acre at least. From the above statement, it will be seen how enormously profitable has been the application in this case of town refuse in the liquid form; and I have no hesitation in stating, that, great as its advantages have been, they might be extended four or five fold by greater dilution of the fluid. Four or five times the extent of land might, I believe, be brought into equally productive cultivation under an improved system of drainage in the city, and a more abundant use of water. Besides these Craigen-tinney meadows, there are others on this and on the west side of Edinburgh, which we did not visit, similarly laid out, and I believe realizing still larger profits, from their closer proximity to the town and their lying within the toll-gates.

The next farm visited was in the immediate vicinity of Glasgow, where the supply of liquid manure is derived from another source, and distributed in a different manner. The supply is from a dairy of 700 cows, attached to a large distillery; the entire drainage from the former flows in a full continuous stream into a tank containing 30,000 or 40,000 gallons, whence it is pumped up immediately by a 12-horse power engine, and forced through 4-inch iron pipes, laid about 18 inches under ground, into large vats or cisterns placed on the highest points of the land to be irrigated. From these it descends by gravitation through another system of pipes laid along the ridges of the hills, finding an outlet through stand-cocks placed at intervals, from which it is distributed through movable iron pipes fitting into each other, and laid along the surface in whatever direction the supply is required. The land thus irrigated consists of three farms lying at some distance apart, the farthest point to which the liquid is conveyed being about two miles, and the highest elevation 80 feet above the site of the tank and engine. The principal use to which the irrigation has been applied has been to preserve the fertility of the pastures, the general appearance of which was at first rather disappointing, but this was explained by the fact that they are fully stocked, and that the cows rush with avidity to those parts that have been last irrigated, and eat them down quite bare. As is the case in other instances, however, by far the most profitable application has been found to be
to Italian rye-grass, of which 15, (Scotch,) acres were under cultivation, some with seed supplied by Mr. Dickinson, whose successful cultivation of it by similar means near London has long been known. The first cutting of this had yielded about ten tons the acre, the second nine, and the third, which was ready for cutting, was estimated at eight or nine more. Some crops of turnips and cabbages were pointed out to us in a state of vigorous growth, and with more than common promise of abundance; these were raised by a dressing of ashes and refuse, (of little fertilizing value, having been purchased at 2s. 6d. a ton,) conjoined with four doses of liquid, one after the preceding crop of oats had been carried, one prior to sowing, and two more at different stages of growth. The enterprising gentleman who has carried out these works at his own expense, and in spite of the discouragement arising from partial failure in his earlier attempts, though speaking cautiously, as was natural in a tenant on a nineteen years' lease, of the pecuniary results of this undertaking, imparted some facts which leave little doubt that it must have been largely remunerative. Besides maintaining, if not increasing, the fertility of the pastures, to which the solid manure from the byres was formerly devoted, at a heavy expense of cartage, (the whole of which is now saved,) he is enabled to sell all this manure, of which we estimated the quantity at about 3,000 tons a year, at 6s. a load. For a good deal of the Italian rye-grass not required for his own consumption, he obtained upwards of 13s. a ton, the profits on which, taking into account the yield before stated, may easily be imagined.

These results fall infinitely short of what might be done by carrying out the same system on an improved scale; the urine, instead of being diluted, as has been found most expedient in practice, with three or four times its bulk of water, is delivered on the land in nearly its full strength, or with not more than one-third of water, thereby occasioning an enormous waste, greatly increased by the impervious nature of the soil of the pastures, from the surface of which it flows off in large quantities, to the loss of its fertilizing effects and to the pollution of the waters of the neighborhood. The breaking up and cultivating more of this land in Italian rye-grass and root-crops would add immensely to the productiveness of the farm. I must
mention that the mode differs in applying the liquid to the pasture and to the cultivated land; on the former, it is distributed from a hose of gutta-percha or vulcanized caoutchouc; on the latter, a succession of short lengths of iron pipe, 3 feet long, 1½ inch diameter, laid down between the drills, are added on almost as quickly as a man can walk, and the liquid is thus shed about the roots of the plants, without touching the leaves, so as to be capable of innocuous application, if desired, at the latest periods of growth. It is interesting to know that these works were undertaken under the combined influence of the late Mr. Smith, of Deanston's, representations of the immense waste of valuable material that formerly took place, and of the remonstrances of parties in the vicinity, to whom the flow of refuse into the adjoining canal was an intolerable nuisance.

The next place visited was the farm of Myer Mill, near Maybole, in Ayrshire, the property of Mr. Kennedy, who adopted and improved on the method of distribution just described. On this farm, about 400 imperial acres of which are laid down with pipes, some of the solid as well as the liquid manure has been applied by these means, guano and superphosphate of lime having been thus transmitted in solution, whereby their value is considerably enhanced. This is especially the case with guano, the use of which is thus rendered in great measure independent of the uncertainties of climate, and it is made capable of being applied with equal advantage in dry as in wet weather. In some respects this farm labors under peculiar disadvantages, as water for the purpose of diluting the liquid has to be raised from a depth of 70 feet, and from a distance of more than 400 yards from the tanks where it is mixed with the drainage from the byres. These tanks are four in number, of the following dimensions respectively: 48 × 14 × 12; 48 × 14 × 15; 72 × 14 × 12; 72 × 17 × 12. They have each a separate communication with the well from which their contents are pumped up, which are used in different degrees of "ripeness," a certain amount of fermentation induced by the addition of rape-dust being considered desirable. The liquid is diluted, according to circumstances, with three or four times its bulk of water, and delivered at the rate of about 4,000 gallons an hour, that being the usual proportion to an acre. The quantity to be applied is determined
by a float-gauge in the tank, which warns the engineer, whose business it is to watch it, when to cut off the supply, and this is a signal to the man distributing it in the field, to add another length of hose and to commence manuring a fresh portion of land. The pumps are worked by a 12-horse power steam-engine, which performs all the usual work on the farm, threshing, cutting chaff and turnips, crushing oil-cake, grinding, &c., and about 6-horse power is the proportion required for the service of the pumps. The pipes are of iron; mains, submains, and service pipes, five, three, and two inches in diameter respectively, laid eighteen inches or two feet below the surface. At certain points are hydrants, to which gutta-percha hose is attached in lengths of twenty yards, at the end of which is a sharp nozzle with an orifice ranging from one to one and a half inch, according to the pressure laid on, from which the liquid makes its exit with a jet of from twelve to fifteen yards. All the labor required is that of a man and a boy to adjust the hose and direct the distribution of the manure, and eight or ten acres may thus be watered in a day. There are now seventy acres of Italian rye-grass and 130 of root-crops on the farm. The quantity they would deliver by a jet from a pump worked by a 12-horse steam-engine would be 40,000 gallons, or 178 tons, per diem, and the expense per ton about 2d.; but a double set of men would reduce the cost. The extreme length of pipe is 3 of a mile, and with the hose the total extent of delivery is about 1,900,000 yards, or 400 acres. To deliver the same quantity per diem by water-carts to the same extreme distance, would be impracticable. One field of rye-grass, sown in April, has been cut once, fed off twice with sheep, and was ready, (August 20,) to be fed off again. In another, after yielding four cuttings within the year, each estimated at 9 or 10 tons per acre, the value of the aftermath for the keep of sheep was stated at 25s. an acre. Of the turnips, one lot of Swedes dressed with 10 tons of solid farm manure, and about 2,000 gallons of the liquid, having 6 bushels of dissolved bones along with it, was ready for hoeing 10 or 12 days earlier than another lot dressed with double the amount of solid manure without the liquid application, and were fully equal to those in a neighbor's field, which had received 30 loads of farmyard dung, together with 3 cwt. guano and 16 bushels bones per acre; the yield was
estimated at 40 tons the Scotch acre, and their great luxuriance seemed to me to justify the expectation. From one field of white globe turnips, sown later, and matured solely with liquid, from 40 to 50 tons to the Scotch acre was expected. A field of carrots, treated in the same manner as the Swedes, to which a second application of liquid was given just before thinning, promises from 20 to 25 tons the acre. Similarly favorable results have been obtained with cabbages; and that the limit of fertility by these means has not yet been reached, was clearly shown in one part of the Italian rye-grass, which had accidentally received more than its allowance of liquid, and which showed a marked increase of luxuriance over that around it. The exact increase of produce has not been accurately determined, but the number of cattle on the farm has increased very largely, and by means of the Italian rye-grass at least four times as many beasts as before can be kept now on the same extent of land, the fertility of the land being at the same time increased. This plant, of all others, appears to receive its nourishment in this form with most gratitude, and to make the most ample returns for it; and great as are the results hitherto obtained, I believe that the maximum of productiveness is not yet reached, and that the present experiment must be carried yet further before we know the full capabilities of the manure. Of one important fact connected with this crop I am assured, that notwithstanding the rank luxuriance of its growth, animals fed upon it not only are not scoured, but thrive more than on any other kind of grass in cultivation. The cost of purchasing and laying down the pipes at Myer Mill has been at the rate of £2 10s. an acre, exclusive of 300 yards of gutta-percha hose, with the distributing apparatus. This does not, however, include the cost of the engine, pumps, and tanks; which last, built of stone and arched over, were constructed at a cost of £300 or thereabouts, stone for the purpose being procured from a quarry close at hand; the cost of the engine, &c., was put at £12 per horse-power. I must not omit to mention, that though the direct application of the liquid manure to grain crops is not practised, its tendency being to induce rankness of growth and liability to lodge, such crops, grown on land previously manured in this manner for grass or roots, gave evidence of the full amount of fertility attained by the usual means re-
maining in the soil without the drawbacks I have mentioned. Whether such may be obviated by the practice of thin sowing and a more diluted manuring, might be a desirable subject of experiment.*

The last farm that came under our notice was a small dairy farm belonging to Mr. Telfer, close to the town of Ayr. It consists of 50 imperial acres, a considerable portion of which was formerly a bare sandy waste, extending to the sea-shore; the fertility of the soil might be judged of from the appearance of the adjacent race-course. By the application of liquid manures with a three-horse power engine, in the same manner as at Myer Mill, diluted occasionally with sea-water, with which his well has a communication, he has raised the fertility of the soil to the extent of supporting 48 cows, where previously 8 or 10 only were kept. The chief crop is Italian rye-grass, from which he has obtained as many as 10 cuttings within the year, having manured somewhat more freely than Mr. Kennedy; he informed us that the produce of 3½ acres yielded keep for 36 cows for four months. To illustrate the extreme rapidity of growth, I may mention, that the difference between a part of the same field that had been cut on Saturday and another part cut on Monday was distinctly visible at some distance. The same treatment has been found similarly successful, though in a somewhat lesser degree as regards weight of produce, with the root-crops grown on the farm; and in the garden we saw cabbages, cauliflowers, greens, onions, rhubarb, and other vegetables, flourishing in an extraordinary degree after one dressing with liquid manure, which was the more remarkable as some of them had been set unusually late in the season. I may add one fact of great importance stated by Mr. Telfer, that besides the enormous increase in the

* In some trial-works near the metropolis, sewer water was applied to land, on condition that the value of half the extra crop should be taken as payment. The dressings were only single. The officer making the valuation reported that there was at the least one sack of wheat and one load of straw per acre extra from its application, on one breadth of land; in another, full one quarter of wheat more, and one load of straw extra per acre. The reports of the effects of sewer water in increasing the yield of oats as well as of wheat were equally good. It is stated by Captain Vetch, that, in South America, irrigation is used with great advantage for wheat.—E. C.
quantity of the produce of his farm, its quality was so much improved, that he was obtaining 2d. per pound above the current price in the district for his butter, this difference amounting to a sum more than equal to the whole previous rent of the farm.

The cases above detailed furnish some measure of the possible results attainable in cultivation, especially corroborated as they are by others which did not on this occasion come under our personal observation, but one of which, I may mention, having recently examined into it, that of Mr. Dickinson at Willesden,* who estimates his yield of Italian rye-grass at from 80 to 100 tons [?] an acre, and gets eight or ten cuttings, according to the season; and as there is no peculiar advantage of soil or climate (the former ranging from almost pure sands to cold and tenacious clays, and the latter being inferior to that of a large proportion of England,) to prevent the same system being almost universally adopted, they give some idea of the degree to which the productiveness of land may be raised by a judicious appliance of the means within our reach. When it is considered that such results may, in the vicinity of towns and villages, be most effectually brought about by the instant removal of all those matters which, when allowed to remain in them, are among the most fruitful sources of social degradation, disease, and death, one cannot but earnestly desire the furtherance of such measures as will ensure this double result of purifying the town and enriching the country; and as the facts I have stated came at the same time under the notice of the gentlemen I mentioned above, under whose able superintendence the arrangements for the water-supply and drainage of several towns are now in course of execution, I trust it will not be long before this most advantageous mode of disposing of the refuse of towns may be brought into practical operation in various parts of the country.

I have, &c.

D. F. Fortescue.

GENERAL BOARD OF HEALTH.

* The soil of this farm is the London clay.
AGRICULTURAL MOVEMENT IN OHIO.

Hon. Marshall P. Wilder,

President of the U. S. Agricultural Society.

Dear Sir:—I have sent you by express, for the library of the Society, copies of the Reports of the Ohio State Board of Agriculture, from the time of its organization, as far as printed. These Reports show the progress of the Agricultural movement in Ohio. From a small beginning, it has made rapid and sure progress. A strong feeling in favor of Agricultural improvement is manifest through the entire length and breadth of the State. There are now more than eighty County Agricultural Societies in successful operation, (one in each county, with but few exceptions,) and they have given a general, wide-spread, and useful interest in the cause of Agriculture. The beneficial effects are every day becoming more and more apparent, in improvements in culture, improved stock of various kinds, and in improved neatness in the appearance of farms, dwellings, and out-houses, and the general introduction of improved farming implements and labor-saving machinery.

The Agricultural movement in Ohio has been developed with a rapid growth, and if it be cherished, and if those systems of policy, and other means of developing the natural and industrial resources, be steadily pursued that have been incepted, we may reasonably hope the good influences of this movement will be felt through the present and many future generations.

Governor Trimble has been a prime mover in the inception and development of the Agricultural movement in this State, and he has been ably seconded by his associates and their successors in the Board of Agriculture. They have all been elected by the Presidents or other Delegates of the County Agricultural Societies in convention assembled, and they have been selected as our ablest farmers—men of intelligence, and enlarged and liberal views. They have recommended to the Legislature to enact such
laws as would in their view aid in establishing, on a permanent basis, a progressive development of the Agricultural interests of Ohio, and thus far complete success has attended the enterprise, both by legislation and the course of policy pursued by the Board. Agricultural Societies have been organized in almost every county in the State. Fairs have been held; awards have been made for superior excellence in the articles exhibited, that will descend as heirlooms in the families; and all these have stimulated the Agriculturists—the manufacturers and artisans of every kind—the horticulturist and the family circle—to increased excellence and increased production of their varied handiwork.

The analyses of the soil of Ohio have been commenced under the authority of the Board, by the writer, and during the past year, thirty analyses of soils, coals, marls, and waters have been made, and others are in progress. The analysis of a soil, to be reliable and fulfil the wants of the farmer, is one of the most difficult problems of analytical chemistry. During the past year, improved methods have been adopted, and the solvent action of rain-water, which is the solvent that nature uses to supply food to plants, has been applied in addition to the various modes before employed. The quantity of nitrogenous materials in soils is also in progress of determination; the importance of which is now better understood and more appreciated than before.

The Ohio State Board of Agriculture has unanimously recommended to the Legislature to authorize a complete Geological and Agricultural Survey of the State, including analyses of the soils, marls, ores, and various other natural products, that will aid in developing the resources, and rendering them available to the hand of industry. This survey, if authorized by the Legislature, will go far in laying a broad and sure foundation for the development of the natural resources of Ohio. Each State in the confederacy ought to have a similar survey executed that has not already done so.

By the organization of County and State Agricultural Societies, and, during the last year, of the United States Agricultural Society, a foundation has been laid, from which, by the aid of wise and discreet counsels, concert and harmony of action, the combined results of scientific investigations and practical experience, a noble superstructure may arise in time, that shall realize
the views entertained by the Father of our country, the Illus-
trious Washington.

The following is a list of the members and officers of the Ohio
State Board of Agriculture for the year 1853:—

Samuel Medary, President, Columbus; M. L. Sullivant, Treas-
urer, Columbus; J. C. Gest, Recording Secretary, Xenia; Wiliam Case, Cleveland; Philo Adams, Huron; R. W. Mus-
grave, Sulphur Spring; W. H. Ladd, Richmond; James M'In-
tosh, Ravenna; James J. Worthington, Chillicothe; R. W. Steele, Dayton.

Samuel Medary, Columbus; J. G. Gest, Xenia; R. W. Steele, Dayton; Executive Committee.

At the October meeting of the Board, the following persons
were appointed members of the U. S. Board of Agriculture for
Ohio:

Arthur Watts, Chillicothe; M. L. Sullivant, Columbus; W. W. Mather, Columbus.

Columbus, January 25th, 1853.

W. W. MATHER.

OHIO STATE FAIR.

We are in the receipt of a pamphlet of some twenty-four
pages, containing a list of the Premiums and Regulations, with
the names of the Awarding Committees, for the FOURTH ANNUAL
FAIR of the Ohio State Board of Agriculture, to be held at the
city of Dayton, on the 20th, 21st, 22d, and 23d days of Septem-
ber, 1853. From this publication, we learn that "the State
Board of Agriculture has this year greatly increased the Premium
List, and offer premiums not only on domestic animals, the pro-
ducts of farms and gardens, and household industry and taste, but also on all industrial products of mechanical and manu-
facturing operations, the fine arts, &c. The amount of the pre-
miums offered exceeds $7,000.

"The Board of Agriculture was organized under the law of
1846, with a view to encourage the farming interests. The eighty County Agricultural Societies which have been organized
subordinate to the Board, under the law of 1846, are in success-
ful operation, and have given an impulse to Agricultural improvement, that has already shown marked effects, and will, we think, exercise a far-reaching influence in the future.

"The citizens of Ohio are now reaping the benefits hoped for by the originators of the Agricultural movement in that State.

"While the Board has taken special pains to foster and promote the Agricultural interest, they have also endeavored, so far as they could with propriety, to lend all their influence to aid the other industrial interests generally, and in this premium list they have offered awards on numerous articles, to encourage manufactures of every kind in their midst, feeling that Agriculture, Manufactures, and Commerce are inseparably connected in every prosperous community.

"The following List of Premiums offered will not be devoid of interest:—

<table>
<thead>
<tr>
<th>6 Premiums offered of $50 each,</th>
<th>$800</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 &quot; &quot; 15 &quot; &quot; 30 &quot; &quot; 600</td>
<td></td>
</tr>
<tr>
<td>8 &quot; &quot; 8 &quot; &quot; 16 &quot; &quot; 256</td>
<td></td>
</tr>
<tr>
<td>7 &quot; &quot; 7 &quot; &quot; 25 &quot; &quot; 210</td>
<td></td>
</tr>
<tr>
<td>4 &quot; &quot; 4 &quot; &quot; 24 &quot; &quot; 100</td>
<td></td>
</tr>
<tr>
<td>14 &quot; &quot; 14 &quot; &quot; 20 &quot; &quot; 336</td>
<td></td>
</tr>
<tr>
<td>21 &quot; &quot; 21 &quot; &quot; 16 &quot; &quot; 420</td>
<td></td>
</tr>
<tr>
<td>25 &quot; &quot; 25 &quot; &quot; 15 &quot; &quot; 400</td>
<td></td>
</tr>
<tr>
<td>25 &quot; &quot; 25 &quot; &quot; 15 &quot; &quot; 375</td>
<td></td>
</tr>
<tr>
<td>3 &quot; &quot; 3 &quot; &quot; 12 &quot; &quot; 36</td>
<td></td>
</tr>
<tr>
<td>82 &quot; &quot; 82 &quot; &quot; 10 &quot; &quot; 820</td>
<td></td>
</tr>
<tr>
<td>66 &quot; &quot; 66 &quot; &quot; 8 &quot; &quot; 528</td>
<td></td>
</tr>
<tr>
<td>8 &quot; &quot; 8 &quot; &quot; 6 &quot; &quot; 48</td>
<td></td>
</tr>
<tr>
<td>125 &quot; &quot; 125 &quot; &quot; 5 &quot; &quot; 625</td>
<td></td>
</tr>
<tr>
<td>1 &quot; &quot; 1 &quot; &quot; 4 &quot; &quot; 4</td>
<td></td>
</tr>
<tr>
<td>165 &quot; &quot; 165 &quot; &quot; 3 &quot; &quot; 495</td>
<td></td>
</tr>
<tr>
<td>45 &quot; &quot; 45 &quot; &quot; 2 &quot; &quot; 90</td>
<td></td>
</tr>
<tr>
<td>43 &quot; &quot; 43 &quot; &quot; 1 &quot; &quot; 43</td>
<td></td>
</tr>
<tr>
<td>2 Gold Medals &quot; &quot; 50 &quot; &quot; 100</td>
<td></td>
</tr>
<tr>
<td>104 Silver Medals, 104 &quot; &quot; 5 &quot; &quot; 520</td>
<td></td>
</tr>
<tr>
<td>68 Bronze Medals, 68 &quot; &quot; 1 &quot; &quot; 68</td>
<td></td>
</tr>
<tr>
<td>640 Diplomas, 640 &quot; &quot; 1 &quot; &quot; 640</td>
<td></td>
</tr>
<tr>
<td>1477</td>
<td>$7,014</td>
</tr>
</tbody>
</table>
AGRICULTURE IN MASSACHUSETTS.

The undersigned, representing the Commonwealth of Massachusetts at the General Board of Agriculture for the United States Agricultural Society, impressed with the importance of having a presentation of the progress and condition of improvements in the several States, submit the following sketch:—

About fifty years since, (say between 1790 and 1800,) "the Massachusetts Society for the Promotion of Agriculture" was established. This included many of the leading minds of the State, such as Dexter, Lowell, Pickering, Parsons, Quincy, and others, who, by their precepts and examples, exerted a highly beneficial influence on the circle around them. Many specimens of the improvements introduced by these gentlemen, especially in the vicinity of the capital, remain as monuments of their wisdom. But some more popular organizations, in which the operative farmers themselves could come in to manage and advise, were found desirable. Hence the origin of the County Societies, which began to be formed about 1820, and are now to be found in every county throughout the State. Wisely the Legislature gave to them encouragement, proportioned to their own contributions, which has enabled them to distribute from four hundred to eight hundred dollars each, annually, since their organization. It cannot be doubted that a most salutary interest has been awakened in Agricultural improvements by the operations and publications of these Societies. Many of them have put forth annually volumes containing well-digested statements of the most approved operations on the farm, and circulated them freely in every village; so that any one who would deign to read, could be in possession of the best knowledge of his more successful neighbor.

Numerous instances have come to our knowledge, of individuals who have doubled their products, by the application of the information thus obtained—who, without it, would probably
have continued to plod on in the way of their fathers. So distinctly and so often have we seen the benefits thus accruing, that we cannot mention them with too much emphasis.

About two years since, at the suggestion of the pioneers of the Norfolk County Society, a volunteer association was formed, by representatives from each of the Societies in the State, for the purpose of securing a more complete and uniform action. Their purpose was pursued con amore, and the consequence has been the organization of a State Board of Agriculture, with the first three officers of State as ex-officio members, with members elected, once in three years, by each of the County Societies, and a permanent Secretary, paid by the State. From this organization, combining the official with the popular representation, constituting a Board of twenty-one members, with a degree of permanency in their character, much is expected. It is but just organized, yet enough has been done to awaken a general feeling in its favor, and to give promise of great usefulness.

Among the improvements that have come to our knowledge, is the introduction of the choice breeds of cattle from England, the Durhams, the Ayrshires, the Devons, and the Alderneys, each having their peculiar merits and distinguishing characteristics. So generally have these been diffused, that there is scarcely a town, or a neighborhood, in which more or less of the blood of these breeds will not be found. So that, when our old breed of animals is spoken of, the inquiry naturally arises, what is meant by "native breed?" We would not be understood as speaking disparagingly of this breed, nor as intimating that it has not in it as good stamina as any other breeds, if its culture and improvement had been as well regarded.

Another marked feature in Massachusetts husbandry is the reclaiming of peat-meadows and offensive bogs. Many of the most valuable acres on our farms have been thus secured. In this manner, there still remains a broader field for successful improvements than any other within our knowledge. It is a kind of improvement entirely within the control of the farmer who is willing to labor, and a class of labor that can be done at times when the other wants of the farm do not press upon his attention. In many instances, a three-fold benefit accrues from these operations; 1st, permanently valuable grounds for culture, likely
to hold out for many years, the soil being deep and rich; 2d, much valuable material for compost, to aid in re-fertilizing the uplands, from which it has washed and accumulated in the valleys; 3d, the annihilation of offensive bogs and quagmires, thereby removing sources of miasmata and disease. Such are a few of the benefits that have repeatedly come within our observation.

The introduction of improved implements of husbandry has been of late an important advance in farm-management. The cart, the plough, the fork, the shovel, the scythe, the axe, and the hoe have each and all so essentially varied in their forms, that their namesakes of fifty years' standing would hardly be recognized as of the same family. It is not too much to say, that in all of these, twenty-five per cent. of the labor necessary for their operation has been saved, and in some of them not less than fifty per cent. This is especially true in the form of the plough, the implement which moulds the foundation of all culture, in the structure of which the mechanics of Massachusetts challenge the world to equal their productions. Go where you may, from the Bay of Fundy to the Gulf of Mexico; from the shores of California to the Cape of Good Hope, you will find in operation ploughs from Massachusetts, whatever may be their specific name. The inventions of her own citizens are not a few; and their sagacity in laying hold of the best inventions of others is not less conspicuous. If there be any "Yankee notions" worth having, Massachusetts citizens will be sure to find them.

The preparation and application of manure lies at the foundation of all successful culture in Massachusetts. Whatever may have been the original fertility of the soil, when first reclaimed from the forest, few acres can now be found that will long reward the toil of the laborer without the application of some fertilizing agent. These are chiefly obtained by the preparation of manures, composts, and otherwise. Everything about the farm, capable of being converted into a manure, is pressed into this service. So many are the facilities for obtaining these supplies, that no industrious farmer need be in want. Generally speaking, if informed how industrious the farmer has been in preparing the dressing for his land, you will have a sure index of the products of his fields. Something has been done by way of remodelling the component elements of soils, by supplying deficiencies in
some fields, and removing redundancies from others; but these operations rest so much on scientific calculations, that they have not yet come extensively within the control of the farmer.

That there is such a thing as Agricultural science, and that it has often been taught with success, the experience of Europe bears abundant testimony. That it is capable of being taught and learned, and successfully applied in practice, is the idea we would bring distinctly to view, and which we hope will so far command the attention of the General and State Associations, now forming, that there will no longer be any question about it.

No maxim can be sounder than this: "The tiller of the soil, if he would succeed to the best advantage, should be interested in the soil he tills." Where it is otherwise, it frequently happens that the fertility of the ground cries out from under the withering culture. This is strikingly illustrated by the English system of tenantry. Notwithstanding the many improvements there introduced, the English cultivators are probably far behind what they would have been, if employment had been united with ownership. Such was the opinion of our own Colman, to whom Massachusetts is so deeply indebted for his untiring labors to elevate her husbandry, both at home and abroad. Adam Smith remarks: "The tenant gets the smallest share with which he can possibly content himself without being a loser; and the landlord seldom means to leave him any more." Where ownership and occupancy are united, may the highest advances be made. Here alone may be expected those prospective plans that wait for distant returns; those new modes of culture which depend on the slow products of years for remuneration. Every cultivator of the soil should have the feeling that each particle of productiveness he adds to his grounds will be his while he lives, and remain to his heirs when he dies; else one of the strongest excitements to persevering effort is taken from him. Perhaps there is no greater obstacle in the way of improvement than that which arises from the mistaken apprehension of the inferiority of the employment. There is a class of young men who seek what they think a more elevated pursuit than the tillage of the ground. They do not fully appreciate the benefits to accrue from inhaling pure air, and the vigorous exertions of their muscles, in the labors of the field. They do not rightly compre-
hend the secret of their fathers' energies. Hence they often wander from their own narrow acres, where contented labor would insure peace and prosperity, in pursuit of an ignis fatuus of popularity and distinction, that bewilders but to betray.

The downward process in our soils can be arrested. It is only for the community to awake to the responsibility resting upon them. It is only for the National and State authorities to extend, in suitable ways, their fostering care to the Agricultural interests of the country, and to lend their aid in applying the light of science to the guidance of labor. That science, which has communicated almost the power of thought to the ponderous machinery, which, moved by steam, saves the labor of millions of hands, will, when properly applied, cause vegetation to spring from arid sands, and our hills and meadows to abound in luxuriance and plenty.

Respectfully submitted,

JOHN W. PROCTOR,
HENRY W. CUSHMAN,

February 2d, 1853.

SIMON BROWN, Committee.

AGRICULTURE IN RHODE ISLAND.


The State of Rhode Island contains 536,291 acres of land. Of these, 351,311 are improved, and the balance are in a state of nature—woods, rocks, and swamps. The returns of the United States Census, of 1850, represent the cash value of farms at about $33 per acre. About one-third part of the State, in the west and north-west, is hilly and rocky; and in these sections the soil is generally thin, and has no great fertility. But the island of Rhode Island, and the other islands in Narragansett bay, as well as the lands bordering on the bay and other waters of the State, are exceedingly fertile.

Wages.—The immense amount of labor required by the cotton and other mills of the State, and the high prices paid by them, have of course had an important influence upon the wages of farm-workmen and women-servants. A farm-hand receives from $12 to $16 a month, for the season of eight months, according to his capacity, or the demand for help; this includes board and
lodging, which is estimated to be worth $2 per week. A competent foreman will readily obtain from $200 to $250 per annum, with board, &c.; and on large estates $300 is sometimes paid. A well-qualified market-gardener is paid from $300, (with house-rent, &c. &c.,) to $500 per annum. Women-servants receive from $1.25 to $2 per week. Of farm-laborers, nine-tenths are Irish; and of female domestics, ninety-nine-hundredths are of the same nation.

Improvements.—As the manufacturing interest has employed much of the muscle of the State, so has it absorbed more than its share of the enterprise. We owe this state of things to the fact that farming is too generally considered to be a clod-hopper's employment, calling for little or no exercise of the mental faculties. These antiquated ideas are, however, fast passing away; and Agriculture is assuming her proper position among sister arts and sciences. We owe this change to the influence of the State Agricultural Society, of the Agricultural press, and to the encouraging examples of successful scientific farmers. Improved implements of husbandry are found on almost every estate; and farmers generally are not so fearful as formerly of burying their manure out of sight with the plough. The next ten years will show a great gain over the past decade.

Crops.—The "Rhode Island Society for the Encouragement of Domestic Industry," (the concise appellation given to our State Agricultural Society, in "the olden time," when men had more leisure, and less use for their breath, than now,) caused to be carefully collected some very valuable and reliable statistics of the Agricultural productions of the State, whereby we are enabled to rectify errors and omissions in the United States Census. The amount and value of the various productions will appear in a table, hereto appended, which we prepared for the Society's publication.

A few facts with regard to the yield per acre may not be without their value. The maximum crop of carrots raised in the State, in the year 1850, (a bad year for root-crops, be it remembered, because of the drought,) was 1,000 bushels per acre. The average was 400 bushels. The minimum crop was 75 bushels! Of onions, the average yield per acre was 350 bushels; the highest being 600 bushels, and the lowest 100. The crop of
Indian corn presents a still more striking difference; the best yield being 100 bushels to the acre, and the poorest 6 — the average of the State being 30½ bushels. So with rye; the best yield being 40 bushels per acre, the average 12½, and the least 3 bushels.

Of course the quality of the lands where the maximum and minimum crops were raised, varied in a greater or a less degree. But it would not be venturing much to assert that the farmer who produced the 100 bushels of Indian corn to the acre would, upon an exchange of farms, bring the farm that yielded the 6 bushels up to the average of the State, about as soon as the six-bushel raiser would bring the yield of the other down to the average.

It is a cheering indication of improvement, that farmers are no longer contented to plant, year after year, the same crops that their great-grandfathers planted, but have altered their plans to suit changed circumstances. Thus, ten years ago, three thousand and odd bushels of wheat were raised; but calculation has proved to farmers that they can raise other products to better advantage, bringing their wheat from States more favored by nature; and the year 1850 shows a growth of but 25 bushels of wheat in the State. The production of Indian corn, meanwhile, has increased 25 per cent.; though it is exceedingly difficult to raise corn in Rhode Island under 40, or indeed 50 cents per bushel. But the products of the dairy have increased from $223,320 to $680,000 per annum; and the yield of the orchards from $32,000 to $64,656. We show now but 44,946 sheep, where in 1840 were found over 90,000; and the number of swine has decreased from 30,659 to 19,415. But our market-gardens have, from next to nothing, been made to yield an annual value of $96,195; the value of the poultry in the little State has increased to over $114,000; and the value of eggs over $80,000 per annum.

Live-Stock.—Of all descriptions of live-stock, about one-half are raised by farmers for their own use; the balance are bought in other States. Cows are purchased in Connecticut and at Brighton and Cambridge cattle-farms; oxen from Worcester county, Massachusetts, and from Vermont and Maine; swine are driven through the towns in large droves, "growing small by degrees and gradually less," both in numbers and in flesh, as
they travel and are "picked out;" the sheep are generally of home-production, we believe. The island of Rhode Island was, and is, celebrated for the excellence of its mutton—the fine air of this "sea-girt isle," and the generous soil, operating, through the crops, beneficially on the sheep. But for the general run of the home-bred oxen, cows, and swine, we have little to say, except that there is great room for improvement. Individual farmers, here as elsewhere, can exhibit superior animals; but we too often see three yoke of lopped-horned, stunted cattle, "like a wounded snake," dragging their slow length along, with three-quarters of a cord of wood at their tails, not to desire a change.

We append, as part of this Report, a table of the value of the Agricultural products of the State of Rhode Island for the year 1850:

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity/Details</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay</td>
<td>75,522 tons, at $12.00 per ton</td>
<td>$906,264.00</td>
</tr>
<tr>
<td>Indian Corn</td>
<td>537,418 bushels, at 70 per bushel</td>
<td>376,192.00</td>
</tr>
<tr>
<td>Potatoes</td>
<td>668,074 &quot; &quot; 75 &quot; &quot;</td>
<td>601,655.50</td>
</tr>
<tr>
<td>Onions</td>
<td>135,579 &quot; &quot; 30 &quot; &quot;</td>
<td>40,673.70</td>
</tr>
<tr>
<td>Carrots</td>
<td>109,187 &quot; &quot; 15 &quot; &quot;</td>
<td>16,378.05</td>
</tr>
<tr>
<td>Rye</td>
<td>30,186 &quot; &quot; 75 &quot; &quot;</td>
<td>22,639.50</td>
</tr>
<tr>
<td>Barley</td>
<td>18,648 &quot; &quot; 75 &quot; &quot;</td>
<td>18,986.00</td>
</tr>
<tr>
<td>Oats</td>
<td>18,629 &quot; &quot; 46 &quot; &quot;</td>
<td>8,383.05</td>
</tr>
<tr>
<td>Peas and Beans</td>
<td>7,014 &quot; &quot; 1.00 &quot; &quot;</td>
<td>7,014.00</td>
</tr>
<tr>
<td>Clover Seed</td>
<td>1,305 &quot; &quot; 7.20 &quot; &quot;</td>
<td>9,396.00</td>
</tr>
<tr>
<td>Grass Seed</td>
<td>2,850 &quot; av. 2.00 &quot; &quot;</td>
<td>5,700.00</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>1,291 &quot; &quot; 75 &quot; &quot;</td>
<td>968.25</td>
</tr>
<tr>
<td>Wheat</td>
<td>25 &quot; &quot; 1.00 &quot; &quot;</td>
<td>25.00</td>
</tr>
<tr>
<td>Milk</td>
<td>6,802,140 gallons, at 10 per gal.</td>
<td>680,214.00</td>
</tr>
<tr>
<td>Wool</td>
<td>111,614 lbs, at 30 per lb.</td>
<td>35,484.20</td>
</tr>
<tr>
<td>Honey and Wax</td>
<td>5,756 &quot; 20 &quot;</td>
<td>1,151.20</td>
</tr>
<tr>
<td>Hops</td>
<td>171 &quot; 20 &quot;</td>
<td>49.59</td>
</tr>
<tr>
<td>Tobacco</td>
<td>12 &quot; 15 &quot;</td>
<td>1.80</td>
</tr>
<tr>
<td>Wine</td>
<td>725 gallons at 1.00 per gall.</td>
<td>725.00</td>
</tr>
<tr>
<td>Orchards</td>
<td></td>
<td>64,656.00</td>
</tr>
<tr>
<td>Market-Gardens</td>
<td></td>
<td>96,395.00</td>
</tr>
<tr>
<td>Poultry</td>
<td></td>
<td>114,937.00</td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td>80,295.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>$3,080,334.44</td>
</tr>
</tbody>
</table>

All which is respectfully submitted by the Board of Agriculture of the State of Rhode Island.

WILLIAM S. KING,
JOSIAH CHAPIN,
STEPHEN H. SMITH.
AGRICULTURE IN MAINE.

In pursuance of the following Resolution, the Committee named therein have prepared the succeeding Paper:—

"Augusta, Me., Jan. 21, 1853.

"In Board of Agriculture, ordered, that Messrs. Holmes, of Kennebec, and Seavey, of Cumberland, be a Committee to prepare and forward to the United States Agricultural Society, a Report respecting Maine and its Agriculture.

"E. F. CRANE, President.

"E. HOLMES, Secretary."

MAINE:
ITS GEOGRAPHICAL AND PHYSICAL POSITION — THEIR INFLUENCE ON ITS CLIMATE, COMMERCE, MANUFACTURES, AND AGRICULTURE — PRESENT CONDITION AND FUTURE PROSPECTS OF ITS AGRICULTURE.

Mr. President and Gentlemen of the U. S. Agr. Soc.:

It seems to be a "fixed fact," that Divine Providence intended there should be a mutual dependence among the inhabitants of the different sections, not only of the globe, but also those of the localities of smaller divisions of the same country. This results, in part, from the diversity established by the Creator in their geographical and physical positions.

But, notwithstanding this mutual dependence on each other, there nevertheless exists, or should exist, in each section, an individual independence, which, if rightly exercised, will enable the people of every location to make its own natural resources bring to them, in a fair and reasonably profitable way, what they wish, or need, of the products of their neighbors. Thus, none are necessarily helplessly dependent, but each becomes
an essential or convenient aid to the other, and every man a co-worker with his brother man, all laboring together for the general good; each contributing, while seeking a competence for himself, to that condition of society which makes a prosperous and flourishing people.

The geographical and physical position of Maine is such as to give to the State somewhat peculiar characteristics, when compared with her sister States in the Union.

Her northern latitude causes a great range of temperature during the year — the extremes of winter's cold and summer's heat being wide apart. Besides this general result, arising from the high latitudes over which her territory extends, the variations or differences exhibited in the face of the country, or what may be called her physical conformation, also cause a corresponding variation of climate, more or less marked, within her boundaries. This will be readily acknowledged, when it is considered that she is bounded, on one side, by more than three hundred miles of ocean — the swells of which, together with the sea-breezes, and the salt exhalations, (the latter being sometimes carried by heavy gales far into the interior,) cannot fail to have a strong influence on her climate, especially in the vicinity of her coast.

There is less snow, and more rain, on the seacoast of Maine, during winter; while, during summer, in that section, it is cooler than in the interior.

In addition to the extent of sea-coast above named, there are fine large rivers rising in the highlands of her frontier, which, traversing the whole breadth of the State on their way to the ocean, divide her territory into as many almost equal divisions. These masses of running water have more or less effect and influence upon her climate.

On her northern confines is a range of mountains of no mean altitude, covered and surrounded by an almost unbroken forest. All these combinations produce the several phases of climate to which we have alluded.

On the sea-coast, as we have before said, we have much less snow than in the interior — more rain and more variable weather generally.

In the interior, we have more snow in winter, less rain in summer, and the weather less changeable generally. On the frontier,
snow falls early in winter, accumulates to a great depth during the season, and remains on the ground late in the spring.

On the sea-coast, the ground freezes before being covered with snow, and is subject to more alternate freezing and thawing in the spring. On the frontier, the ground being covered early with deep snows, which continue all winter, freezes but very little, and, as soon as the snow is gone, vegetation starts quickly and progresses rapidly.

On the seaboard and middle portions of Maine, the northern varieties of Indian corn grow and mature well, not unfrequently producing from 60 to 100 bushels per acre. On the extreme northern frontier, in what is called the Upper Madawaska region, Indian corn seldom, if ever, matures; yet, in this region, excellent crops of wheat, barley, oats, peas, and buckwheat are raised; and the esculent roots, such as the potato, ruta-baga, mangel-wurtzel, sugar-beet, &c., are produced in abundance, and of superior quality.

In the southern and middle portions, most of the common fruits, except peaches, or the more delicate varieties of grapes, grow and mature well.

In the extreme north, but few varieties of apples mature; but plums, cherries, and most of the berries, are produced abundantly. The natural arrangement of sea-coast, rivers, and mountains, renders Maine uncommonly well adapted to the three great pursuits of life; viz., Commerce, Manufactures, and Agriculture.

The extent of her sea-coast and the innumerable creeks, inlets, and bays, affording excellent harbors, and the stretch of her navigable rivers, give her people facilities of access to other parts of the world, and excite to commercial enterprise and activity; and we accordingly find Maine, though but thirty years of age as an independent State, ranking number one, as a ship-builder, and but little in the rear of her tallest sisters as a ship-owner.

Her rivers, with their numerous tributaries, scarcely one of which passes from its source to its mouth without presenting in its cascades and waterfalls valuable mill-sites, afford excellent water-power, and render her advantages for manufacturing very superior. These privileges are coming into use as fast as the
increased demand for manufactured articles and the augmentation of capital will warrant.

Lumbering and the manufacture of lumber into the various forms which the markets of the world require, have hitherto engrossed the greater part of the capital of the State, and led to the neglect of Agriculture among us. This may seem strange, for it is generally allowed that commercial and manufacturing activity stimulates Agricultural operations. But the stimulus thus afforded by such pursuits in Maine, has been more beneficial to the farmers of other States, especially to the wheat-growing and pork-raising ones, and for this reason: the population of Maine has not hitherto been sufficiently numerous, or dense, to cause either of the above-named pursuits to be crowded; and hence, although Agriculture must and will flourish somewhere in the same ratio as do the other interests, yet, in those locations where there are not people enough to supply the call for labor in each of these departments, one or the other must be neglected, and this neglect, thus far in Maine, has fallen upon her Agriculture. This, and not the lack of good soil, nor the fact of what some would call the rigors of a northern climate, is the main cause why this State is somewhat in the background in an Agricultural point of view. Of soils, she has within her boundaries almost every variety that has been created, (except that arising from the debris of volcanic materials,) and she has millions of fertile acres, as yet unbroken by the plough, awaiting the hand of well-directed cultivation, to enable them to pour forth liberally and profitably, sustenance for man and beast.

What has she done, as a State, for Agricultural Improvement?

Her first efforts in this cause were in 1820—soon after she was separated from Massachusetts, and received into the Union. A State Agricultural Society was formed. Cattle-fairs and shows were held by this Association at Hallowell, on the Kennebec. Addresses were delivered and premiums awarded for two or three years; but, as no permanent funds were supplied by the State, and the facilities of conveyance from distant parts of the territory being not very good or convenient, those only who lived in
the immediate vicinity of the place of exhibition could avail them-
selves of the advantages of the Society, and it was discontinued.
Subsequently, the plan of County Societies was adopted, and
a law was passed, granting to each county a sum of money, to be
expended in premiums, equal to that raised by the respective
Societies, not exceeding three hundred dollars to a county.

In 1837 and '8, she adopted the system of giving a bounty on
wheat and corn raised within the State. The "speculation
fever," as it was called, had swept over the State. The people
became infatuated with the idea of making fortunes by the
sale of wild-lands, water-privileges, quarries, &c. Agriculture
was neglected, and the evil effects of this neglect soon be-
came apparent in the high price of flour and provisions, for
which the people became dependent in an uncommon degree
upon other States. The bounty-system drew heavily upon the
treasury; but the money was not lost, and it had the effect of
drawing attention to the subject of cultivation, and induced dis-
cussion among the people in regard to their dependence upon
other States, and the capacities of their own lands.

What is she doing now for Agricultural Improvement?

In the way of social action, almost every county has an active
Agricultural society, and some of the counties have two.
A Board of Agriculture has been established, and a bill is
now pending in her Legislature, to establish a State and Experi-
mental Farm, with what result remains to be seen.

As regards practical Agriculture, large quantities of wheat
and corn are raised in her territory, but not quite enough, as yet,
to supply the home demand. She exports oats; also potatoes in
great abundance, when the fatal and insidious "rot" does not
prevail. She also exports apples to a large amount.

Her staple crop, at present, is grass. In ordinary seasons,
large amounts of hay are exported.

Dairying, which might be her leading Agricultural business,
is not sufficiently attended to by the farmers of Maine.
Large amounts of butter are exported, and great quantities of
cheese are imported. There are but few dairies in the State
which feed or number fifty cows.

Grazing requiring the least outlay, has mostly engrossed the
attention of our farmers, and consequently beef-cattle, store-
cattle, horses, and sheep, are the principal Agricultural products,
and immense herds are annually driven from this State to the
several markets.

The lumbering business requires a great amount of beef and
pork, and also demands many thousands of heavy oxen and
horses for labor. It might seem to some that the business of
rearing cattle, where the winters are so long that the foddering
season continues through six and sometimes seven months of the
year, would be unprofitable. This, however, is not the case.
We believe it is a law of nature, that within those parts of the
temperate zone where the winters, by their length, demand a
great supply of forage, the soil, as well as the temperature of
the summers, is congenial to the luxuriant growth of grass, and
of course an abundant supply may be collected and stored for
winter consumption. This certainly is the case in Maine.

Farming in this State has not yet become a systematic busi-
ness. It has hitherto been considered by farmers themselves as
secondary to other pursuits, and they have consequently been
too much in the habit of trusting to other means for wealth.
Too many have been ready to abandon field and plough, and even
home itself, in order to plunge into any speculation which chanced
to offer them a better opportunity to gather a more abundant
harvest of the "almighty dollar," though at tenfold the labor
and risk that are required to make an honest living and a fair
competence on their farms.

The lack of system which prevails too generally, and want
of pride in the occupation which is manifested by too many, and
the looking, as some do, upon Agricultural labor as the veriest
drudgery of life, have been productive of much evil to the Agri-
culture and Agriculturists of Maine, and a serious drawback
to the advancement and prosperity of her farmers. But there
is the dawn of a better day, in this respect, breaking upon her
horizon.

A spirit of inquiry is beginning to make itself heard and felt
throughout her community. Agricultural publications are more
sought after and read. The Maine Farmer, an Agricultural
publication, issued once a week in the State for the last twenty
years, after struggling for a series of years in poverty, is now
receiving a handsome support; and two others, one of which is the "Farmer and Artisan," a monthly paper, devoted to the cause, are beginning to be favorably received. Many similar publications from other States are received and attentively read. That ancient bugbear, "book-farming," has lost its terrors.

As yet we have no State Society, but the United States Society is regarded with favor among us, and its ultimate success most heartily desired by the farmers of Maine.

These, as the doctors would say, are favorable symptoms, and if, by the wise co-operation of all the means and appliances that are now in operation, or are to be put in operation, these desires and manifestations should be cherished and encouraged, a more healthy and active condition of Agriculture would be established, not only in Maine, but throughout the Union, and the farmer and his profession take the stand they should, and be productive of their full measure of utility to our country and to the world.

E. HOLMES,

MARCIAN SEAVEY,

Committee.

UNITED STATES AGRICULTURAL SOCIETY.

STATE BOARDS.

MAINE.

Ezekiel Holmes ................. Winthrop.
Stephen L. Goodale .............. Saco.
Henry Little .................... Bangor.

NEW HAMPSHIRE.

Hon. Samuel Dinsmore ...........
Hon. Anthony Colby ..............
Hon. John H. Steele ............. Peterborough.

VERMONT.

John Wheeler .................... Burlington.
Gen. E. P. Walton ............... Montpelier.
S. W. Jewett .................... Middlebury.
<table>
<thead>
<tr>
<th>State</th>
<th>Name</th>
<th>City/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts</td>
<td>Hon. John W. Proctor</td>
<td>Danvers</td>
</tr>
<tr>
<td></td>
<td>Hon. Henry W. Cushman</td>
<td>Franklin Co.</td>
</tr>
<tr>
<td></td>
<td>Simon Brown</td>
<td>Concord</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>William S. King</td>
<td>Manton</td>
</tr>
<tr>
<td></td>
<td>Josiah Chapin</td>
<td>Providence</td>
</tr>
<tr>
<td></td>
<td>Stephen H. Smith</td>
<td>Lonsdale</td>
</tr>
<tr>
<td>New York</td>
<td>William Kelly</td>
<td>Rhinebeck</td>
</tr>
<tr>
<td></td>
<td>Lewis G. Morris</td>
<td>Mt. Fordham</td>
</tr>
<tr>
<td></td>
<td>Benjamin P. Johnson</td>
<td>Albany</td>
</tr>
<tr>
<td>New Jersey</td>
<td>Thomas Hancock</td>
<td>Burlington</td>
</tr>
<tr>
<td></td>
<td>Jonathan Ingham</td>
<td>Salem</td>
</tr>
<tr>
<td></td>
<td>William Parry</td>
<td>Cinnaminson</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Frederick Watts</td>
<td>Carlisle</td>
</tr>
<tr>
<td></td>
<td>John H. Ewing</td>
<td>Washington</td>
</tr>
<tr>
<td></td>
<td>H. M. M'Alister</td>
<td>Bellefonte</td>
</tr>
<tr>
<td>Ohio</td>
<td>Dr. Arthur Watts</td>
<td>Chillicothe</td>
</tr>
<tr>
<td></td>
<td>William W. Mather</td>
<td>Columbus</td>
</tr>
<tr>
<td></td>
<td>M. L. Sullivant</td>
<td>&quot;</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Henry T. Duncan</td>
<td>Lexington</td>
</tr>
<tr>
<td></td>
<td>George W. Williams</td>
<td>Paris</td>
</tr>
<tr>
<td></td>
<td>Stephen Ormsby</td>
<td>Louisville</td>
</tr>
<tr>
<td>Michigan</td>
<td>Rev. Charles Fox</td>
<td>Grosse Isle, Wayne Co.</td>
</tr>
<tr>
<td></td>
<td>Andrew Y. Moore</td>
<td>Schoolcraft, Kalamazoo Co.</td>
</tr>
<tr>
<td></td>
<td>Jonathan Shearer</td>
<td>Plymouth, Wayne Co.</td>
</tr>
<tr>
<td>California</td>
<td>Gen. J. C. Hutchinson</td>
<td>Sacramento</td>
</tr>
<tr>
<td></td>
<td>Capt. John Horner</td>
<td>San Jose</td>
</tr>
<tr>
<td></td>
<td>Frederick W. Macoudray</td>
<td>San Francisco</td>
</tr>
</tbody>
</table>
AGRICULTURAL PERIODICAL LITERATURE.

The last twenty years have witnessed a very manifest advance in the Agricultural literature of this country. It is within the memory of most of the present generation of farmers, when an Agricultural periodical was rarely seen—when the Plough-Boy, by Southwick, the New England Farmer, by Fessenden, and the American Farmer, (the Pioneer of the Agricultural press,) were all that were known as Agricultural papers. The circulation of these Journals was quite limited, and confined mainly to their immediate localities. They had, however, a most favorable influence wherever read, and they were the pioneers to an extended Agricultural press, that now occupies a very high and useful position in most of the States of our Union. Many of these periodicals are of a truly practical character, adapted to the wants of the agriculturist; and by the frequent dissemination of valuable articles from practical as well as scientific men, they are greatly advancing the interests of Agriculture and elevating the pursuit. Some of these publications have but a limited circulation, and are conducted by men not very familiar with the subject of Agriculture; still, from the valuable extracts that are often to be found in them, from more ably conducted journals, and the communications of a practical nature, good is done; and while habits of reading are encouraged, a taste for improvement often follows, which otherwise might have lain dormant. The number of weekly and monthly periodicals, devoted wholly or in part to the subject of Agriculture, is quite large. In New York and New England, probably more than one-half of the whole are now published. Several of these are edited by men of ability, and familiar with the wants of the farmer, and are sustained by a corps of correspondents of great power and worth. These publications have many of them a very extended circulation; some of them circulate in every State and Territory in our country, as well as in foreign lands. They are valuable to the farmer as aids to improvement, furnishing him with that knowledge which
it is so important he should possess, and without which he might never be apprised of the progress which is making in this and other countries in the pursuit to which he has devoted all his energies for life. Here, also, he is furnished with the various discoveries which science is constantly unfolding, which are useful to him in his profession—and in every department of his pursuit, here he must search for that information so all-important to his progress.

The rapid increase in the number of Agricultural periodicals in this country is without a parallel in any other, and is evidence most gratifying of the onward progress of the Agricultural interests in the United States. It assures us, that the claims of this great and leading branch of American industry are yet to assume their proper position in our country, and encourages us to labor for the elevation of the Agricultural population to their proper position in the social and political framework of our system. As the press shall have advanced with more matured and refined intellect in its management, we may anticipate a more rapid progress, and watch with interest every development tending to the speedy accomplishment of the great work.

The signs of the times, however, indicate the necessity for an Agricultural work of a higher class than any which has been established; and we trust the period is not far distant when such a work will be published. It need not, and will not interfere with the present valuable periodicals which have done so much to create a taste for Agricultural reading, and which may lay just claims as pioneers to a more elevated and higher order of literature adapted to our improved and advancing condition. The time has arrived when our people need, and will sustain, a Quarterly, filled with able papers, by men of science, practical experience, and familiarity with the whole subject of Agriculture and its kindred branches, and should discuss matters of importance to the Agriculturist, in a more detailed and thorough manner than can be done in a weekly or monthly Journal. It should embrace not only Agriculture proper, but chemistry and geology in their applications to Agriculture—mechanics and engineering, as connected with implements and machinery necessary for the farmer. Such a work, embodying the experience of scientific and judicious men, would have a tendency to advance
this great interest, to unfold its beauties, present its attractions, impart dignity to its pursuit, and secure for it a position and place among our institutions, inferior to no other.

We can only refer to the number of the Agricultural Journals published in this country, so far as we have information in regard to them.

In New England, there are nine, weekly and monthly; New York, twelve; Pennsylvania, three; Maryland, one; Ohio, three; Virginia, one; Georgia, two; South Carolina, two; North Carolina, one; Florida, one; Indiana, two; Illinois, one; Wisconsin, one; Kentucky, one; Missouri, one; Michigan, two; making forty-three. There are probably others, with which we are not familiar. In addition to these, a very considerable portion of the weekly political papers devote a part of their columns to Agriculture, and are contributing good service by the matter which is furnished under their Agricultural head. Some of the Agricultural papers have a circulation of more than 20,000 copies, thus scattering broadcast over our land knowledge that will instruct and elevate the great Agricultural class. In addition to these, able Horticultural Journals are published, which are affording most efficient aid in this department, so important to the farmer.

Many interesting and useful Agricultural publications are issuing from the press; most of them republications or abridgments of foreign works — while many of them are original contributions of a useful character — and the very large and increasing demand for works of this description is a gratifying evidence of the interest which is on this subject felt by our farmers.

While we cannot give assurances of all the progress which is desired, or that the character of the Agricultural press is equal to what the spirit of the age requires; and while it must be admitted, that too great a proportion of the Agriculturists are still plodding in the footsteps of their predecessors, too sluggish to learn what improvements are abroad, or to inquire by what they may be benefited — it is still most encouraging to be assured, that in the support which is given to the Agricultural press, and the demand for new Journals in every direction, we have the assurance that we are advancing in taste, practice, and literature. There is probably no other country in which so large a number
of Agricultural Journals, in proportion to its population, is circulated, as in the United States—and we believe that it may with truth be said, that to these Journals we owe much of the progress which has attended our Agriculture during the present century.

The Agricultural Journals of Great Britain are not many—and, so far as our information extends, their circulation is much less than the leading Journals in this country. There they are more often identified with political questions than with us. Several of their weekly Journals are, however, very ably conducted, and are filled with valuable matter for the farmers of the country. Their department for the grain and stock markets is peculiarly valuable, and in this feature they should be more frequently imitated than they have yet been in this country. The leading weekly Journals are, the Mark-Lane Express, Bell’s Weekly Messenger, Agricultural Magazine, London, Farmer’s Herald, Chester, Gardeners’ Chronicle, London, North British Agriculturist, Edinburgh. The country Journals generally are well filled with all that relates to the markets of the kingdom, and frequently with a separate Agricultural department, well conducted. The Farmers’ Magazine, a monthly publication, is a work of great merit, and is usually supplied with matter useful, not only to that country, but valuable to all others. Our neighbors in the British provinces have manifested considerable spirit for Agricultural improvement by means of the press; and the letters of “Agricola,” published many years since at Halifax, may now be read to advantage by the most skilful farmer in any country.

The Royal Agricultural Society, of England, the Highland and Agricultural Society, of Scotland, and the Royal Improvement Society of Ireland, issue quarterly publications, which are of the highest order of merit. The publications of the Royal Agricultural Society, of England, and the Highland and Agricultural Society, of Scotland, which number upwards of twenty volumes each, contain a mass of matter on the subject of Agriculture and its improvements, including many Prize Essays of great importance, that cannot be found in any other form. A careful perusal of them by our intelligent farmers, would be prolific of valuable suggestions. While these publications con-
tain much that is specially adapted to Great Britain, and which would not be so practically beneficial to this country, nevertheless, a very large proportion of the valuable essays and articles on farm-husbandry would be read with interest, and prove highly useful. Upon the Continent, under the auspices of government and by Agricultural societies, there are quite a number of Agricultural Journals or Essays published regularly. In France, the National and Agricultural Society issue their Reports quarterly or yearly, which are very ably conducted; and the fulness of the experiments which are constantly being made under the directions of the Society, and which are given in these Reports, are of great value. In Germany, Austria, Prussia, and Russia, publications are issued, but to what extent we are not advised. In Germany, however, some of the most important works on science, as applied to Agriculture, are issuing from the press; and a careful perusal of them cannot fail of being useful to the intelligent American farmer. Many of these are comprised in the works which have been republished in this country, and have had an extensive circulation.

We have but alluded to the importance which we deem the Agricultural press to bear in its relation to the farming interests of the United States—but we trust this brief sketch will tend to influence the Agriculturists of our country to take a far deeper interest than they have yet taken, in a literature adapted to their tastes and wants. We believe it may be asserted with truth, that the condition of any portion of our country may be determined by the patronage which is given to the press. Wherever our own valuable Journals are found in the residences of the farmers and planters, there, as a general rule, will be found a better system of husbandry, and this in many instances so apparent as to strike the eye of an observing traveller. What, then, may we not reasonably hope for our country, when an ably-conducted Journal shall be found in every farmer's habitation, and when the leisure hours of the husbandman shall be devoted to a careful perusal of its pages, and in giving occasionally to its columns, as he should do, the results of his own experience, thus adding to its value, and extending his sphere of usefulness?
MISSOURI STATE AGRICULTURAL SOCIETY.

We have received from James L. Minor, Corresponding Secretary, the Report of the Committee on Agriculture, of the Legislature of Missouri. It is a sound practical paper, the effects of which upon the Legislative body were immediate, and followed by results which, we cannot doubt, will prove as lasting and durable as the existence of the State itself.

The Legislature, at its late session, passed an act to incorporate a State Society, and appropriated for its use one thousand dollars per annum for the next four years; an expenditure from which, we doubt not, the interests of that thriving State will derive more practical advantage, and reap richer returns, than from any appropriation ever granted. No public investments are so well calculated to rouse the enterprise, and promote the real, permanent, and rapid advancement of a people, as those devoted to education and the improvement of Agriculture. Of these interests, the ground-work being well laid, the arts and sciences generally must flourish, the moral and social virtues must increase, and that people will be prosperous and happy. We have lately occupied a position from which we have been enabled to appreciate, to some extent, the powerful influence, growing prosperity, and lucrative commerce, which must result from well-directed efforts in the cause of Agriculture. If the money of the capitalist is asked for the construction of a railroad, he will not be found willing to vest his means for such purpose, with a view to profit from the enterprise itself, in any region of country, without investigating its present and prospective resources from the soil; and our opportunities, as connected with the developments of the Seventh Census, have enabled us to realize, to an extent never imagined, the healthy stimulating influence of Agriculture, and its subsidiary arts, in creating the strength and power, and controlling the wealth of
our own country and the capital of other nations; and the more we study the subject, and the greater the facilities for observation, the stronger are our impressions that our General Government and the individual States overlook, to a lamentable degree, the simplest, but most effectual means, of becoming rapidly and permanently great and powerful. In one of the letters of John Young, (Agricola,) the ability of Great Britain, during a twenty-years' war, to sustain herself in her protracted struggles with the powers of Continental Europe, was declared to result from the impulse given to the Agriculture of the kingdom, by the establishment, by Parliament, of the Board of Agriculture; under which, like enchantment, there almost instantaneously sprang up numerous institutions which led to such increased productions as enabled her native fields to sustain her population, and thus preserve her preponderance in the scale of nations. We hope the example of Missouri will be followed by other States, and that the formation of her State Society will lead to the establishment of auxiliaries in every county, and that all will in time lend a helping hand to the United States Agricultural Society, and our sympathies be reciprocally felt, and good results follow our mutual efforts.

REMARKS OF GEO. W. P. CUSTIS, ESQ., BEFORE THE U. S. AGRICULTURAL SOCIETY.

We are most happy to have it in our power to present, with the first number of the Journal under the regular organization of the United States Agricultural Society, the remarks made on the occasion of our Annual Meeting, by the veteran Agriculturist, Geo. W. P. Custis, Esq. While we regret that domestic affliction, and the state of his health, placed it out of the power of the sage of Arlington to furnish a copy of the remarks made on the occasion referred to, in time for their appearance in their proper order, among the proceedings of the Society as published at the commencement of this volume, we cannot refrain from congratulating our fellow-members, and thanking our venerable
and distinguished Vice-President, that we have been enabled to place thus permanently on record, these words of wisdom so felicitously conceived and so nobly and eloquently expressed. Their delivery, on the occasion referred to, created the deepest feelings of emotion in every heart; and, in their perusal now, none who were present will fail to recollect with pleasure, the enjoyment of that moment when they felt so deeply the effect of the power of eloquence as manifested in the impromptu words then uttered. While grateful that his own health, recently impaired, has been entirely restored, the members of the Society generally will deeply sympathize with our venerable and distinguished Vice-President, in the heavy domestic affliction with which he has been visited, in the loss of the partner of his bosom.

An interval occurring in the business of the Society, Mr. Custis, of Arlington, Vice-President for Virginia, rose and addressed the meeting. He said:

"Mr. President and Gentlemen: — I do not rise to call the notice or commendation of this respected Society to any Agricultural merits of my own; for though a farmer of fifty years' standing, I can boast of but little proficiency in the noble employments of Agriculture and Domestic Economy. I rise, sir, to endeavor to render 'honor to whom honor is due;' to introduce to the favorable notice of this Society an Agriculturist, whose generous example and distinguished services in the cause of Agriculture and Rural Affairs, have earned for him the proud appellation of public benefactor — EDMUND RUFFIN, of Virginia." (Cheers.)

The Vice-President continued — "Not very many years ago, the axe preceded the plough in Southern Virginia, and thousands of acres of the noblest forests in the State — forests that would have built mighty navies — were ruthlessly cut down and burnt upon the ground, that crops might be made in the ashes. The mode of cultivation of that day was, in what was called three shifts, and this was persisted in until the wretched farmer found he had no shift left, but to shift himself off to the West, or starve amid the ruin himself had made. It was indeed the age of Agricultural barbarism; a widely-spread system of de-
struction pervaded the land; vast tracts of country were worn out and abandoned; and strange to say, (yet true,) in several parts of the Old Dominion, the wolf, driven from his native haunts two centuries before, by the advance of civilization, returned to resume his ancient reign, and to howl over the desolation of Virginia.

"It was at this crisis," continued Mr. C., "that the public benefactor appeared. By his writings, his experiments, and above all, his practical example, he stayed the mighty ruin that was about to render one of the fairest portions of his native State a desert; and by the introduction of marl and other fertilizers, showed to his countrymen that in the very soil they were about to abandon in despair, Providence had provided abundance of material to restore their wasted lands, and to preserve the population of Virginia about the homes of their fathers."

The Vice-President further observed—"I can speak somewhat feelingly, gentlemen, respecting the age of Agricultural barbarism. I may say not 'pars,' but 'magna pars fui,' my Southern estates being immediately in the infected district. They consist of eight thousand acres of land originally among the finest in Virginia, known from the first settlement of the Colony as the Pamunkey Low Grounds. A large body of these lands was in cultivation, and nearly an hundred pairs of hands toiled upon them for between thirty and forty years, that your humble servant, the unhappy proprietor of all, might be distinguished as the poorest man of large property in the world.

"At length things arrived at their lowest state of depression, when the crops upon my two great estates amounted to seven hundred bushels of a trash undeserving the name of wheat, and it was at this period of universal gloom bordering on despair, that better destinies suddenly dawned upon Southern Virginia. My 'long agony' was over. By the use of marl, the oyster-shell, clover, and plaister of Paris, together with improved tillage, and the very able and energetic management of the gentleman who has charge of my estates in the South — an hundred and fifty miles from my residence — my old patrimonial acres have cast off the garb of barrenness and desolation, and now flourish and 'blossom as the rose.' (Cheers.) Mark the contrast between
improvement and no improvement. 'Look on that picture!' Under the old régime: crop, seven hundred bushels of trash. 'Look on this!' Under the new régime, for seven hundred bushels of trash, read seven thousand bushels of fine wheat as ever received the brands of Gallego or Haxall!' (Cheers.)

Mr. C. continued — "Ye generous Americans, 'venerate the plough,' the truest emblem of every nation's greatness. Reward with your honors the Heroes of Peace. Adorn with the civic wreath the brow of the conqueror who has vanquished ignorance and prejudice, and dispersed the clouds of error, to let in the sunlight of improvement, prosperity, and national aggrandizement. The blameless trophies of the victor in peace are industry, economy, individual, and social happiness. On the victorious fields of Agriculture are strewn none of the wrecks of humanity; flowers spring up there, shedding a sweet perfume, and wafting a grateful incense to Heaven. Then 'speed the plough, and onward be the march of improvement, till every rood of earth will maintain its man.'

"Agriculture, the primitive employment of man, has been honored in all ages of the world. We learn from ancient history, that, in the purest and palmiest days of Roman virtue, when a Dictator was required to save the Commonwealth, a Cincinnatus was chosen from between the handles of the plough.

"The great men of America, when their terms of public service have been accomplished, have all returned to the rank of private citizens; and has the lustre attending their public actions been dimmed, when, resigning high official stations, they have retired to private life to spend the evening of their days amid the calm, yet endearing delights of Agriculture and Rural Affairs? And he, the most beloved, when his glorious career of public service was ended, and stricken in years and laden with honors, he too became a private citizen—was the veneration of his country and mankind in anywise lessened toward the Pater Patriae, when the Chief Magistrate of a mighty empire became merged with the Illustrious Farmer of Mount Vernon?" (Cheers.)

The Vice-President continued — "Then 'speed the plough,' and respect the citizen who patiently tills the soil. Remember, the farmer is not a bird of passage, but is riveted to the soil he tills; his hopes, his fears, his prosperity, and the best charities
of his life, all centre in his peaceful and happy home; and when war's alarms shall threaten his country, 'tis then the husbandman 'will show his generous nature.' 'Tis he who looks around him, and beholds the smoke as it curls up from his comfortable homestead, who sees

'The busy housewife ply her evening care,
While children run to lisp their sire's return,
Or climb his knee, the envied kiss to share.'

With all these blessings at his back, think ye not the husbandman will defend them against a ruthless invader? My life on it but he will; and let an invader come from where he may, he will be cautious how he rouses a lion in such a lair!

"We have proud and gallant reminiscences of the value of the husbandman in war, from the annals of the heroic age. Untie the scroll of Fame, that tells of 'the times that tried men's souls,' and you will find emblazoned in characters that can never fade, Lexington, Concord, the Heights of Charlestown, in the North; with the Great Bridges in Virginia, and the King's Mountain in the Carolinas. In these memorable combats, the husbandman appeared not in the panoply of arms, nor in aught that savored of the 'pomp and circumstance of glorious war,' but went at his work farmer-fashion, in his shirt-sleeves; and that the job was done in a workmanlike manner, let the best disciplined veterans of Europe, flying 'like a herd of hunted deer,' before the farmers and the farmers' sons, show, while it proves the value of the husbandman in war."

Mr. C. continued—"Mr. President and gentlemen: I humbly conceive that, under Providence, this Society is destined to exert the most beneficial and happy influences upon the whole of our beloved country. By means of our vast correspondence, the correspondence of an empire, we shall receive masses of valuable information, only to be diffused again throughout the whole length and breadth of our land. Our experiments, scientific and practical; the teachings of our lectures, made known through the press to the remotest portions of our vast domain; but above all, when we have gone ahead a little more, our Model-Farm, where young men will be taught Agriculture as a science, and reduce the same to practice under the most skilful farmers the country affords—and why should we not have graduates in
Agriculture and Rural Economy, as well as graduates in arts and arms? (Cheers.)

"Assuredly, my dear sir, and gentlemen," continued Mr. C., "Government will, in due time, extend a fostering care and protection to this generous Institution, engaged in the promotion of as noble a cause as ever claimed the care and protection of any government or people. It has been thought that England owes her vast power to her commerce or naval supremacy; not so—say rather to her improved, her matchless Agriculture—'thereby hangs the tale' of her greatness. England has ever been foremost among the nations of the world in giving 'speed to the plough,' and honor to the tiller of the soil; and even when engaged in the extension of her mighty commerce, has ever been the patron and promoter of home industry. Hence the magnificent works of improvement that adorn that ancient and renowned isle. Vast tracts of country reclaimed from the sea, wastes that for centuries had lain idle, all brought into the finest and most productive cultivation. Such are England's victories of peace, such the triumphs of her Agriculture, the benefits resulting from which will endure to England's posterity, when the triumphs of her arms are forgotten." (Cheers.)

The Vice-President concluded—"We are as yet small in point of numbers, but recruits will repair to our standard, and I trust that at another meeting we shall fill this spacious hall with our members. Permit me, Sir, and gentlemen, to offer to you my grateful acknowledgments for the honor you have done me in my election as a Vice-President, when it is remembered that I came to your first meeting a perfect stranger—an old American. I offer my humble prayer for the success of the United States Agricultural Society, in its generous labors for the public good; may onward be its march, through long time to come, till, grown hoary in age and usefulness, its benefits shall have extended to every portion of our beloved country."
NEW YORK STATE AGRICULTURAL SOCIETY.

As a matter of historical interest, in connection with the progress of Agricultural science, and as illustrative of the effects of plans wisely conceived and efforts well directed, the article at page 22, from the pen of B. P. Johnson, Esq., the indefatigable Corresponding Secretary of the New York State Society, may be read with much profit; and we are happy to grace the pages of the present number with an article which so satisfactorily proves the power, value, and importance of Associations for the improvement of the practice and science of husbandry.

NEW YORK AGRICULTURAL COLLEGE.

We are happy to perceive by the following article, taken from the June number of the Journal of the State Agricultural Society, that New York, great as she is in all the enterprises relative to internal improvements, commerce, and education, is determined to animate and invigorate still further, by an enlightened and elevated policy, the Agricultural interests of her people, by the establishment of an Agricultural College. The work seems to be entrusted to the proper persons; and when we appreciate that the direction of this matter is confided to gentlemen of liberal minds, and so well known to be above all the petty calculations of personal interest, we cannot but view it as one of the most important measures of the day, and pregnant with the most happy results. When we realize that the Government of France pays annually more than eight millions of francs for the support of her Veterinary Schools and for professional instruction in Agriculture, we think it time that our country, flourishing as she is, should be no longer passive on the subject of public encouragement to such institutions; and we look upon those as public benefactors, who thus direct Legislative action into channels so important, and which must lead to the accomplishment of such good practical results.
From the Journal of the New York State Agricultural Society.

New York State Agricultural College.—This Institution was chartered by the Legislature of the State of New York, for the purpose of presenting to Agriculturists the means for acquiring a knowledge of the Arts and Sciences appropriate to their vocation, and to prepare students for practical active labor, by training the mind in a system which shall inculcate an intimate acquaintance with the sciences essential to Agricultural success.

To insure the development of principles and their application to the soil, the Legislature has required the purchase of not less than three hundred acres of land.

The Trustees, having accepted the trust confided to them by the Legislature, organized the State Agricultural College, by the following appointments:

JOHN DELAFIELD,  
President of the College.
HON. JOHN A. KING,  
Chairman of the Board of Trustees.
JOEL W. BACON, Secretary.
N. B. KIDDER, Treasurer

IMPROVED STOCK.

One of the best proofs of the flourishing condition of our Agricultural interests may be found in the demand for improved stock, especially cattle, and the remunerating prices which are obtained by those persons who devote their attention to the raising of pure-blooded animals for the market.

While the remarkably high prices which attended the earlier importations are not now to be looked for, the results of recent sales furnish abundant evidence that our farmers possess the taste and have the means to secure good stock at prices which are calculated to remunerate the enterprise of the raiser and importer, as well as satisfactory to the purchaser.

At a recent sale of short-horned stock, belonging to Colonel J. M. Sherwood, of Auburn, N. Y., the following prices were obtained:—
<table>
<thead>
<tr>
<th>Names</th>
<th>Set up price</th>
<th>Sold for</th>
<th>Purchaser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pansey, 3d</td>
<td>$300</td>
<td>$450</td>
<td>J. G. Brasee, Lancaster, O.</td>
</tr>
<tr>
<td>Pansey, 4th</td>
<td>300</td>
<td>525</td>
<td>P. Lorillard, West. Co. N.Y.</td>
</tr>
<tr>
<td>Phantom</td>
<td>200</td>
<td>210</td>
<td>John J. West, Illinois.</td>
</tr>
<tr>
<td>Phantom, 2d</td>
<td>300</td>
<td>300</td>
<td>A. Clemens, Philadelphia.</td>
</tr>
<tr>
<td>Phantom, 3d</td>
<td>150</td>
<td>170</td>
<td>S. Bush, Sullivan Co.</td>
</tr>
<tr>
<td>Ozema</td>
<td>200</td>
<td>240</td>
<td>John G. Brasee, Ohio.</td>
</tr>
<tr>
<td>Ozema, 2d</td>
<td>150</td>
<td>165</td>
<td>J. W. Titus, Duchess Co.</td>
</tr>
<tr>
<td>La Polka</td>
<td>200</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>La Polka, 2d calf</td>
<td>150</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>Poppy</td>
<td>200</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>Nightshade</td>
<td>200</td>
<td>260</td>
<td>A. Clemens, Philadelphia</td>
</tr>
<tr>
<td>Pet</td>
<td>300</td>
<td>310</td>
<td></td>
</tr>
<tr>
<td>Pet, 2d</td>
<td>300</td>
<td>400</td>
<td>Wm. Kelly, Rochester.</td>
</tr>
<tr>
<td>Pet, 3d</td>
<td>150</td>
<td>300</td>
<td>John Foster, U. Canada.</td>
</tr>
<tr>
<td>Nymph</td>
<td>200</td>
<td>220</td>
<td>W. S. Ward, Westchester.</td>
</tr>
<tr>
<td>Topsey</td>
<td>150</td>
<td>160</td>
<td>J. G. Brasee, Ohio.</td>
</tr>
<tr>
<td>Sarah</td>
<td>100</td>
<td>125</td>
<td>H. Fellows, Sennett.</td>
</tr>
</tbody>
</table>

**BULLS.**

<table>
<thead>
<tr>
<th>Names</th>
<th>Set up price</th>
<th>Sold for</th>
<th>Purchaser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vane Tempest</td>
<td>$1000</td>
<td>$1070</td>
<td>J. P. Robinson, Wisconsin.</td>
</tr>
<tr>
<td>Lafayette</td>
<td>300</td>
<td>310</td>
<td></td>
</tr>
<tr>
<td>Powhatan</td>
<td>300</td>
<td>310</td>
<td>H. Bailey, Westchester Co.</td>
</tr>
<tr>
<td>Novelty</td>
<td>200</td>
<td>215</td>
<td>J. P. Robinson, Wisconsin.</td>
</tr>
<tr>
<td>Petrarch</td>
<td>300</td>
<td>400</td>
<td>J. G. Brasee, Ohio.</td>
</tr>
<tr>
<td>Pope</td>
<td>200</td>
<td>230</td>
<td>J. P. Robinson, Wisconsin.</td>
</tr>
<tr>
<td>Dragon</td>
<td>100</td>
<td>130</td>
<td>A. Beach, White Plains.</td>
</tr>
<tr>
<td>Dandy</td>
<td>150</td>
<td>170</td>
<td>J. P. Robinson, Wisconsin.</td>
</tr>
<tr>
<td>Irishman, calf</td>
<td>100</td>
<td>135</td>
<td>A. Beach, New Jersey.</td>
</tr>
<tr>
<td>Loco Foco calf</td>
<td>75</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>
STATE FAIRS, 1853.

New York, at Saratoga, Sept. 20, 21, 22, 23.
Michigan, at Detroit, " 28, 29, 30.
Vermont, " 13, 14, 15.
Pennsylvania, at Pittsburgh, Sept. 27, 28, 29.
Kentucky, at Lexington, " 13 to 17.
New Hampshire, at Manchester, Oct. 5, 6, 7.
Maryland, " 25, 26, 27, 28.
Illinois, at Springfield, " 11, 12, 13, 14.
Indiana, at Lafayette, " 12, 13, 14.
Wisconsin, at Watertown, " 4 to 7.
Virginia, at Richmond, Nov. 1, 2, 3, 4.
Lower Canada Board of Agriculture, Annual Exhibition, Sept. 27 to 30.
Upper Canada, Oct. 5 to 7.
Southern Central Agricultural Society, Augusta, Georgia, " 17 to 20.

THIRD REPORT ON THE AGRICULTURE OF MARYLAND.—By James Higgins, M. D., State Agricultural Chemist. This Report, although admirably written, and highly interesting as to the general matters of which it treats, is most defective in the analyses of soils. While the processes given and the analytic work are of but comparatively small practical and scientific value, the principal doctrines are orthodox, and well enumerated. It is to be regretted that so much labor should have been expended on common earthy matter, which exists in abundance in most of our soils, and that the very fertilizers, for which the author professes to search, are wholly neglected. Where, for instance, has he given the proportions of phosphates, or of ammonia, or of its salts, in any soil?

That portion of the work treating on Guano must be highly useful to the Atlantic farmers, and is well worthy their perusal.
SUGGESTIONS TO OUR MEMBERS AND THE OFFICERS OF AGRICULTURAL SOCIETIES.

We have experienced much difficulty in determining the residence of some members of the U. S. Agricultural Society, and would request each individual to send us a statement setting forth his post-office address; and as it will be satisfactory to know that each member has received his copy of the Journal, we would respectfully suggest that each individual acknowledge the receipt thereof, from which we will the better be enabled to know what numbers have miscarried, and understand how to apply the correction. It will be seen, by reference to the Annual Address of our President, that he very properly calls attention to the importance of a "closer alliance between the United States Agricultural Society and kindred associations in the various States and Territories." In accordance with this view, it is hoped that every Society in the United States, devoted to the advancement of Agricultural science and the promotion of Agricultural interests, will immediately send us a copy of their Reports, with the proceedings of their last annual meetings, which shall be carefully preserved. We would be pleased, also, to receive in the way of exchange, the various Agricultural publications of the country. Interchange of our publications will lead to concerted operations for the general good, tend to reciprocal advantage, and result in benefit to the Agricultural community.

Judge Mason, the Commissioner of Patents, having kindly placed at our disposal, for the use of the Society, 150 copies of the Agricultural portion of the Patent-Office Report, we will be happy to forward a copy to such members as may not have been supplied therewith from other sources.

By reference to the proceedings of the United States Agricultural Society, it will be seen that this publication is furnished free of cost to the members of the Society. The frequency of its issue will depend upon the state of the funds of the Association, which, we hope, will at least justify a QUARTERLY.
To the Friends of Agriculture:

The undersigned, Officers of the United States Agricultural Society, in behalf of said body, respectfully invite the friends of Agriculture in all the States and Territories, to join their National organization. Its objects are to embody in one central Association, the valuable information already obtained by various local Societies, and to establish a more intimate connection between them; to correspond with foreign Societies, and to diffuse a knowledge of their most important Agricultural improvements and discoveries; and, in various other ways, to aid the promotion of this noble art.

It is not by isolated and individual exertion, but by united and associated action, that rapid progress is to be made and a general interest awakened. Measures of a wise and efficient character should be taken to increase our knowledge of rural arts and sciences, as well as to communicate to every tiller of the earth such professional information and individual experience as the best farmers and planters are able to impart.

Brother Farmers! in what terms shall we address you, to secure a practical recognition of the advantages of co-operation in a scheme that embraces every State and Territory in the Union, and is eminently calculated, as we believe, to elevate and advance the great farming interest?

The plan of operations that has been adopted, is indicated by the Constitution, to which your attention is specially invited.

It is obvious that this Association cannot be useful to the country unless many persons join it, and existing Agricultural Societies give it their confidence. In its organization, it presents
perhaps the best possible means which could be devised, through its office at the seat of Government, for an interchange of seeds and plants, and the obtaining of any special information desired by its members, without cost or charge. Its funds are devoted exclusively to the promotion of the interests of Agriculture, and are expended with the greatest care and most rigid economy consistent with its object. The services of its officers are rendered gratuitously; and, while they hope to furnish each member with an equivalent to the amount of his subscription, their happiest reward will consist in your approbation of their efforts and cordial support of their objects.

The fee for Membership has been fixed at the moderate price of two dollars per annum, or twenty-five dollars for Life-Membership, in order to multiply the number of members, to make the Society co-extensive with the country, or to enable it to put into the hands of each subscriber a Journal, or an annual volume, valuable to himself and creditable to the Association and to American Agriculture.

A united and general effort to sustain the United States Agricultural Society should not be delayed. Several gentlemen have already made liberal donations to this Association; its list of members is rapidly increasing; its late auspicious meeting at Washington was one of great interest, and its numerous Agents are actively prosecuting its important objects in various States and Territories of our country. Brother Farmers! you are, and must ever continue to be, the most numerous class of citizens in this great Republic. Your labors educe from mother earth the bread on which others exist, and also a great portion of the wealth which gives power and respectability to our beloved country. Your industry increases the value of the soil which you cultivate; your influence, wisdom, and virtue render you the principal conservators of the public good, the strength and bulwark of the nation. To you especially do we look for encouragement and aid.

MARSHALL P. WILDER,
President.

Jos. C. G. Kennedy, Corresponding Secretary.

END OF NO. 1.
JOURNAL

OF THE

United States Agricultural Society.
EDITORIAL NOTICE.

This number of the Society's Journal is edited by the undersigned in compliance with the request of the Corresponding Secretary, communicated through the President. In thirty days after undertaking the duty, the matter herein contained was solicited, prepared and placed in the hands of the printer. In twenty days thereafter, it is ready to be mailed to members.

To the friends who have answered so promptly, and so well, our call for aid; we return, in the Society's name and our own, hearty thanks.

The excellent paper, entitled "Ventilation of Farm Buildings," should have been credited to the North British Agriculturist. A short but severe illness while this article was going through the press, prevented the editor from accompanying it with comment,—especially, upon that portion, which treats of the effect of light upon the well-being and well-doing of neat cattle, whereon we differ from the opinions expressed by the very able author.

In consequence (among other reasons) of the many typographical errors, that occurred in the first Number of the Journal issued by the Society, the Executive Committee had it under consideration to republish in the second Number the doings of the National Agricultural Convention, and the Transactions of the United States Agricultural Society; with such other matter as should be deemed advisable. Meanwhile, the Second Number of the Journal appeared; and (by reason of some misunderstanding, on the part of the editor, of the Committee's action,) was issued as No. 1, and paged accordingly.

The present (double number) is issued as Nos. 3 and 4; and is, of necessity, paged independently of either of its predecessors. It completes the First Volume.

This Number is mailed to every member, whose Post Office address is known; but an inspection of the list of members will show that there are many, who have given only the State, and not the post-town, in which they reside. If a full direction is at any time, forwarded; we will mail the publications at once; and all members, who have failed to receive the two former Numbers of the Journal, will be supplied by notifying us of the fact.

The Annual Meeting of the Society, it will be remembered, will be held in the City of Washington, on the 22d day of February, next. Business of interest and importance will be submitted at this meeting; that not only demands the attendance of all, who have at heart the Society's success, but will amply repay members for the cost and trouble of coming.

Boston, January, 1854.

WILLIAM S. KING.
FIRST NATIONAL EXHIBITION OF HORSES.

Sometime in the month of September, application was made by a Committee of citizens of Springfield, Mass., to the President of the United States Agricultural Society, (Hon. Marshall P. Wilder,) for the countenance and aid of the Society in holding an Exhibition of Horses at that place. It was represented to the President, that a local committee would take upon themselves the charge of carrying into effect any arrangements that might be agreed upon by a joint committee of the Society and of the citizens of Springfield; and that a fund of $5,000 was already guaranteed to meet all expenses.

The President, after consulting with a majority of the members of the Executive Committee, promised to the Springfield Committee the countenance and co-operation of the Society.

A list of names for the various boards of Judges was accordingly agreed upon; and, at the request of the President, the Recording Secretary of the Society visited Springfield, and remained several days, counselling with the Committee, and furthering the common cause; and the advice of the Executive Committee was sought upon every step taken by the local Board; and when given, was faithfully followed.

When we reflect how valuable a servant to man is the horse, how faithful, and how much he has contributed, and is still contributing, to the furtherance of man's interests;—how large a number of this noblest of quadrupeds are now owned, and are annually bred in the United States; how capable of improvement by wise breeding, and how vast a sum may be added to our
agricultural wealth by such improvement;—all will acknowl-
edge that the proposed Exhibition deserved the encouragement,
which it received from the Society. "Strike out of our civiliza-
tion," said Edward Everett, "what the horse has contributed
to it, and we shall find a surprisingly large blank."

The number of Horses in the United States is set down in the
census tables of 1850, at 4,325,652; but this is far below the
fact. In the instructions given to the U. S. Marshals who col-
lected the statistics, they were directed, (for some reason—un-
doubtedly a wise one, though the wisdom is not apparent—)
to take no account of the horses in the cities. Thus the number
of horses in the township of Providence, R. I., (in which is the
city of Providence,) as returned by the Marshal, was 22! Whereas
the exact enumeration, made under the direction of the
State Agricultural Society, made to appear that there were more
than two thousand horses, in the stead of 22. The same sin-
gular mode was pursued in all the cities of the Union; so that
we may fairly state the number of horses in the country at (and
indeed over) 6,000,000.

It seems to us that $50 each would be a low es'timate of the
average value of a horse; but this would give us $300,000,000
(three hundred millions of dollars) as the amount invested
in this description of live stock.

To speculate a little in probabilities, we think that greater at-
tention to the breeding and management of horses, growing out
of increased knowledge, would give us an increase of 25 per
cent. on their average value. This would amount to $75,000,-
000 (seventy-five millions of dollars!) as the resultant gain
from a little more knowledge.

The facts in the case—leaving out of sight the speculations
—prove how urgent is the necessity of directing the attention
of farmers, breeders, and of statesmen, too, to the improvement
of the horse. In this view of the case, how obvious is the
duty of the National Agricultural Society?
THE EXHIBITION.

This was held, under the auspices of the United States Agricultural Society, at Springfield, Mass., on the 19th, 20th, 21st and 22d days of October, 1853.

For the purposes of the Exhibition, a large lot, containing twenty-two acres, the property of the Federal Government, was, in the kindest manner, placed at the disposal of the Committee, by Col. Ripley, Superintendent of the U. S. Armory at Springfield; who, in many other ways, effectually advanced the purposes of the Exhibition. This lot was surrounded by a high board fence, and furnished on two of its sides with an aggregate of more than 300 stalls. On the west side of the lot, extending some 400 or 500 feet, were arranged tiers of elevated seats, capable of accommodating 4,000 spectators. Fronting these seats was the judges' stand, and between the seats and the stand ran the track, which, (fifty feet wide,) described an ellipsis in its exact half-mile circuit, and was prepared for its uses with a great deal of care, labor and expense. At the north-west corner of the grounds, was erected a tent for the entertainment of the multitude; and in the centre of the grounds a Mammoth Tent was erected for the Banquet, capable of seating from 2500 to 3000 people.

At 9 o'clock on the morning of Wednesday, October 19th, 1853, the gates of the show-grounds were thrown open, and the crowds of spectators admitted.

At 10 o'clock, the officers of the United States Society, the local board, and the Committee of Judges being assembled upon the Judges' stand, the Chief Marshal, (Mr. George Dwight,) as President of the local Board, addressed the President of the United States Agricultural Society, and announced that the Exhibition was ready to be opened. He happily sketched the birth and growth of the enterprise up to the present moment, and expressed his gratification at its appearance of entire success.

Marshall P. Wilder briefly and appropriately replied. He congratulated the Managers and Committees on the admirable arrangements that had been made for the Exhibition; upon
the bright and beautiful sky that smiled upon them from above; the unequalled collection of noble coursers which had been gathered from twenty States, and the thousands of interested and delighted spectators, who were congregated to examine and admire one of man's noblest servants and coadjutors. In closing, he pronounced The First National Exhibition of Horses ever held, to be opened.

Amid the enthusiastic cheers of the multitude in response to his Address and announcement, the cavalcade commenced their grand entree and parade,—numbering, in all, about 400 horses—in the following order, as previously arranged by the Marshal:—

1. Stallions of 7 years old and over.
2. Stallions from 4 to 7 years old.
3. Thorough-bred Horses.
4. Stallions of 4 years old and under.
5. Matched Horses.
6. Fancy Horses.
7. Geldings.
8. Breeding Mares.
11. All Horses entered for exhibition or sale.
12. Farm or team Horses.

This was one of the most interesting and imposing portions of the entire Exhibition. The whole half-mile circuit of the track was covered, in many places three and four deep, with prancing steeds in the fulness of life and vigor;—one half-mile of animated strength and beauty!

When this moving panorama had twice circled the field, the order of march was broken, and hundreds of horses were seen dashing across the plain in every direction, at top of speed, frisky as kittens, or wild with the excitement of delight. Others, who kept the track, tried to give, each to his neighbor, a clear view of their heels. It was a maze of eccentric motion, bounded by a whirling circle!

The deep tones of the signal bell, placed beside the Judges'
stand, announced the hour of high noon—the time appointed for the trial of Draft Horses.

The Board of Judges on this class, were Rev. C. C. Sewall of Medfield, Mass., Henry A. Dyer, of Brooklyn, Conn., Henry Fuller Jr., of Springfield, Thomas Hancock, of Burlington, N. J., and George P. Delaplain, of Madison, Wis.

The show in this department consisted of only 4 double teams, and 1 single team, as follows:

ENTRIES OF DRAFT HORSES.

No. 1. Jack and Tom, 7 years old, raised in Western Massachusetts, owned by H. J. Chapin, of Springfield.

No. 2. Charley and Bill, 10 and 8 years old, gray, native breed, weigh 2,250 lbs. each, 15½ hands high; raised in Hampden County, and owned by E. Trask, of Springfield.

No. 3. Charley and Jim, 5 years old, Morgan breed, weigh together 2,310 pounds, 15½ hands high, raised in Cortland Co., N. Y., and owned by George W. Goodrich, of Pittsfield.

No. 4. Major and Colonel, 4 years old, Messenger breed, weighs 2,400 pounds together, 16 hands high, raised in Saratoga Co., N. Y., and owned by C. Fonda, of Clifton Park, N. Y.

No. 1. Single Teams. Young Quebec, 6 years old, weighs 1,500 pounds, and owned by E. & E. A. Rice, of West Meriden, Ct.

The trial of these horses took place on the Northern part of the grounds, upon a wagon, weighing 1,700 pounds, and loaded with pig iron to the amount of a little more than 5,100 pounds.

We cannot fancy a more faithful Committee than our friends who trudged for four hours, to and fro, in the rear of this pig iron; but we can picture, to our mind’s eye, a more exciting occupation. Several hours were spent in these trials, and, in the meantime, the crowd had gone home to dinner, and were beginning to congregate for the exhibitions of the afternoon.

At 2 o’clock, the bell rang according to programme for the

EXHIBITION OF BREEDING MARES.

This department was most gratifyingly full. Of Breeding Mares, there were forty-eight entries, and of Breeding Mares
with foal at side, nine entries. Many of the animals were among the finest breeding mares in this country, and several of them celebrated for the excellence and high standing of their progeny. The following gentlemen constituted the


LIST OF ENTRIES OF BREEDING MARES.

No. 1. Cleveland Maid, 6 years old, Eclipse stock, raised in Marietta, O., 15 hands high, owned by G. M. Atwater, of Springfield, Mass.

No. 2. Jenny Lind, 5 years Abdallah stock, weight 1000 pounds, raised on Long Island, owned by Benjamin Pease, of Warehouse Point, Ct.

No. 3. Gipsey, 4 years, Messenger breed, 900 pounds, 15 hands high, raised in Starkboro', Vt., owned by Miner and Cooke, of Rutland, Vt.

No. 4. Jenny Lind, owned by H. W. Miller, of Middletown, Conn.

No. 5. Nelly Morgan, Black Hawk breed, 935 pounds, 15 hands high, raised in Vermont, black, owned by Henry D. Deane, of Mansfield, Mass.

No. 6. Lady May Fly, 8 years, bay, owned by P. M. Kibbe, of Boston.

No. 7. Dolly, 8 years, Black Hawk breed, 950 pounds, bay, for sale, owned by Dr. H. F. Gardner, of Springfield.

No. 8. Kate Hayes, 8 years, English breed and birth, 1,230 pounds, 16 hands high, owned by Henry Alexander, Jr., of Springfield.

No. 9. Old Mazzeppa, 12 years, Morgan breed, 1,100 pounds, 15 hands high, raised in Vermont, bay, owned by E. S. Morrow, of Suffield, Ct.

No. 10. Active, 6 years, Black Hawk breed, 1000 pounds, for sale, owned by F. Stiles, Jr., of Clappville, Mass.

No. 11. (No name,) owned by John Pollard, Nashua, N. H.

No. 12. Kate, 7 years, Messenger breed, 1,175 pounds, 15½ hands high, raised in Vermont, owned by Dr. G. C. Segur, of Springfield, Mass.
No. 13. Topsy, 4 years, Hambletonian stock, 825 pounds, 15 hands high, raised in Shoreham, Vt., owned by Daniel Ramsdell, of same place, for sale.

No. 14. Pocahontas, raised in Vermont, Black Hawk breed, 975 pounds, 15 hands high, owned by Francis Wilson, of Kingsbury, Vt., dappled bay.

No. 15. (No name,) 7 years, Morgan breed, owned by Stillman French, of Keene, N. H.

No. 16. Roan, owned by E. S. Howard, of Chicopee.

No. 17. Jenny Lind, 7 years, Black Hawk breed, 1,200 pounds, 15 hands high, raised in Vermont, owned by Charles W. Sherman, of Vergennes, Vt., dark bay.

No. 18. Julia, 8 years, Messenger breed, 1000 pounds, 15 hands high, raised in Maine, owned by I. T. DeWolf, of Bristol, R. I., sorrel.

No. 19. Lady Jane, 8 years, Morgan stock, 1050 pounds, 15 hands high, raised in Vermont, gray, owned by John Healey, of Worcester.

No. 20. Fanny Ricker, 7 years, Blucher breed, 1050 lbs., 15 hands high, raised in New Hampshire, bay, owned by Henry Fuller, Jr., of Springfield.

No. 21. Fanny, 4 years, Morgan breed; 1000 pounds, 15 hands high, raised in Vermont, owned by D. Pynchon, Springfield.


No. 23. Lady Moscow, 7 years, French and Morgan, 900 pounds, 14 hands, raised in Canada, chestnut, owned by M. Leplant, of Shutesbury, Mass.

No. 24. Dolly, 5 years, Morgan breed, 1,125 pounds, 15½ hands, raised in Greenfield, Mass, and owned by George A Kibbe, of Springfield.


No. 27. Lady Bliss, 4 years, Black Hawk breed and English, pounds, raised in Leicester, Mass., and owned by R. S. Denny, of Clappville, Mass.
No. 28. Lydia, 8 years, Morgan breed, 1,300 pounds, chestnut, raised in Limerick, Maine, and owned by Amos Felch, of the same place.

No. 29. Jenny Lind, 6 years, thorough-bred, 1025 pounds, 15 hands, raised in Greenfield, Ohio, black, owned by A. L. Bingham, of Cornwall, Vt.

No. 30. Fanny, 9 years, Morgan breed, 950 pounds, 15 hands, raised in Fair Haven, Vt., and owned by Capt. Newman, of Vergennes, Vt.

No. 31. Berkshire Maid, 16 years, Duroc and Messenger breed, 1050 pounds, 15½ hands, raised in Berkshire, owned by A. M. Perkins, of Becket, Mass.

No. 32. Nelly Fortune, 6 years, Black Hawk breed, 980 pounds, raised in Rutland, Vt., chestnut, owned by Philip Bacon, of Simsbury, Ct.

No. 33. Jeannie Deans, 6 years, Henry breed, raised in Vermont, owned by Philip Bacon, of Simsbury, Ct.

No. 34. Lady Nell, 10 years, Morgan stock, 1080 pounds, 15 hands, raised in Vermont, and owned by U. Bowen, of Richmond, N. H.

No. 35. Kate, 5 years, Morgan breed, 1,185 pounds, 15 hands, raised in Hardwick, Mass., bay, owned by Orrin How, of the same place.

No. 36. Fanny, 5 years, Morgan breed, owned by A. Lyman, of West Randolph, Vt.

No. 37. Lady, 7 years, Morgan breed, owned by S. R. Morton, West Randolph, Vt.

No. 38. Susan Letfly, 4 years, Morgan breed, owned by Edwin Edson, of Vermont.


No. 40. Lady Hunt, 6 years, Tippoo stock, 1000 pounds, 15½ hands, raised in Camden, owned by William Beardsley, of Albany, N. Y.

No. 41. Bates Mare, 10 years, owned by G. R. Orcutt, of Middlebury, Vt.


No. 43. Fanny Jenks, 5 years, Morgan breed, 970 pounds, raised in Derry, Vt., owned by Otis Leonard, of Oxford, Mass.

No. 44. Nancy, owned by A. M. Galpin, of Springfield, Mass.
No. 45. Jenny, 9 years, Morgan breed, 970 pounds, raised in Berkshire, and owned by J. W. Lawrence, of Chicopee.

No. 46. Fanny, 4 years, Morgan breed, 1000 pounds, 15 hands, raised in Portage County, Ohio, sorrel, owned by Taylor and Phelps, of Springfield.

No. 47. Lady Lombard, 8 years, sorrel, owned by M. Ashford, of Brimfield, Mass.

No. 48. Dolly, owned by W. W. Loomis, of Springfield.

BREEDING MARES WITH FOAL AT SIDE.

No. 1. (No name,) 7 years, Morgan breed, owned by E. P. Walton, of Montpelier, Vt.

No. 2. Mary Taylor, owned by R. S. Denny, of Clappville, Mass.

No. 3. (No name,) owned by William Reed of Tariffville, Ct.

No. 4. Victoria, 9 years, Canadian breed, 15½ hands, 1,125 pounds, owned by Robert Tucker, of Ware, Mass.

No. 5. White, 11 years, Messenger breed, 1,400 pounds, 16 hands, raised in Oswego County, N. Y., and owned by Jackson Nichols, of Flushing, L. I.

No. 6. Pink, 6 years, Morgan breed, 1,100 pounds, raised in Southbridge, Mass., and owned by George Sweetland, of Springfield.

No. 7. (No name,) 3 years, Western breed, raised in Hartford, Ct., brown, owned by B. W. Hamilton, of Hartford.

No. 8. Lady Walpole, Morgan breed, 13 years, 950 pounds, 14 hands, raised in Deerfield, chestnut, and owned by George Allen, of Walpole, N. H.

No. 9. Agnes, 12 years, Hero stock, 150 pounds, raised and owned in Pittsfield, by Robert Pomery.

All these animals passed in review before the Board of Judges, and were afterwards especially examined at the north end of the grounds. At 4 o'clock, the regular exhibitions of the day had closed. Then there was a general "trial of speed," and this was a very interesting part of the day's proceedings. The crowd filling the seats looked on with great interest, applauding their favorites, and offering those who seemed to need it, all sorts of advice.
SECOND DAY,
THURSDAY, OCTOBER 80.

At 8 o'clock, the gates of the exhibition grounds were thrown open, and from that time until late in the afternoon, visitors thronged into the enclosure by thousands. The number present was somewhere from fifteen thousand to twenty thousand. At 9 o'clock, the judges assembled at their stand, with the Executive Committee of the National Agricultural Society, the Board of Managers, and the distinguished guests of the occasion. Long before this, the fast and fancy horses had taken possession of the track, and were coursing around in fine style.

The first of the regular exercises of the day was the examination and

EXHIBITION OF MATCHED HORSES.

This department of the exhibition was represented by a large number of beautiful animals, the majority of them elegantly matched. Some of the pairs were of the choicest and most valuable character, and attracted a great deal of attentive admiration. The following were the


The horses came on for exhibition, and passed in review before the judges’ stand as their numbers were announced. They were then ordered to pass four times around the track, and then to assemble at the north end of the grounds, to be examined by the Board of Judges at their leisure. The entries were as follows:

MATCHED HORSES.

No. 1. Dandy, 7 years, 16 hands, 1,150 pounds, black, raised in Warren County, N. J. Topsey, 5 years, 16 hands, 1,150 pounds, raised in Monmouth County, N. J., and owned by David Sanderson, Somerville, N. J.

No. 3. Sam and Charley, the former 6 years, weighing 1,200 pounds, and the latter 5 years, weighing 1,175, both 17 hands, of Topgallant breed, bay color, and raised in New Jersey.

No. 4. Jenny and Dolly, the former 4, and the latter 5 years, weighing 1020 pounds each, black, of Black Hawk breed, owned by L. T. Miner, of Rutland, Vt. and raised in Chittenden Co., Vt.

No. 5. Bay horses, owned by J. B. Elliott, of Keene, N. H.

No. 6. Sherman and Hawk, stallions, weighing 1000 pounds each, the former 15 hands, of Black Hawk breed, the latter 16 hands, of Morgan breed; owned by S. C. Hall and Co., Manchester, N. H. and raised in Manchester.

No. 7. Owned by Lewis A. Philips, of Providence, R. I.

No. 8. Sam and Tige, each 8 years, 16½ hands, weighing 1,160 pounds, of Messenger breed, owned by Genery Twichell of Boston, and raised at Black Rock, N. Y.

No. 9. Tige and Maje, each 6 years, 16 hands, weighing 1,100 pounds, of Native breed, and owned by L. B. Chapman, of Windsor Locks, Ct.

No. 10. Jenny and Fanny, black, each 15 hands, the former 10 years, weighing 1050 pounds, the latter 8, weighing 1000 pounds, both of Morgan breed, and owned by J. C. Baxter, Springfield. The former raised in Longmeadow, the latter in Wilbraham, Mass.

No. 11. Sam and Tom, each 5 years, 15½ hands, weighing 1000 pounds, of the Eclipse breed, bay, and owned by Orsen W. Judd, of St. Lawrence Co., N. Y., where they were raised.

No. 12. Bay and Blucher, each 5 years, 16½ hands, weighing twelve hundred pounds, of Blucher breed, owned by J. H. Doane, of Jefferson Co., N. Y., where they were raised.

No. 13. Kate and Fan, each 8 years, 15½ hands, weighing 1050 pounds, bay, owned by William H. Symonds, Springfield, the latter raised in West Springfield, Mass.

No. 14. Prince and Duke, the former 6, the latter 7 years, weighing each 1050 pounds, buckskin color, owned by David P. Foote, Waterbury, Ct., raised in Vermont.

No. 15. Jake and Tom, each 6 years, of Messenger breed, weighing 1,200 pounds gray, owned by Nathan Bassett, Chatham Four Corners, N. Y., raised in New York State.

No. 16. Pomp and Prince, each 6 years, 15½ hands, weighing 1050 pounds, of Morgan breed, owned by Nathan Bassett, Chatham Four Corners, raised in New York State.
No. 17. Quaker and Citron, the former 6, the latter 7 years, each 16\(\frac{1}{2}\) hands, weighing 1,100 pounds, of Hambletonian breed, sorrel, owned by John Clark, Framingham, Mass., raised in Vermont.


No. 19. Tiger and Dan, each 5 years, 15\(\frac{1}{2}\) hands, the former weighing 1050, the latter 1060 pounds, bay, owned by T. J. Shepard, Springfield, Mass., raised in Western New York.

No. 20. Tiger and Robin, the former 5 years, 16 hands, the latter 6 years, 15\(\frac{1}{2}\) hands, each weighing 1,125 pounds, bay, of Kentucky Hunter breed, owned by H. H. Parsons, Amherst, Mass., raised in Western New York.

No. 21. Jim and Jack, the former 6, the latter 7 years, each 15\(\frac{1}{2}\) hands, weighing 1,100 pounds, bay, of Morgan breed, owned by Elijah Hubbard, Hatfield, Mass., raised in Colrain, Mass.

No. 22. Jimmy and Dandy, each 7 years, 15 hands, weighing 1025 pounds, dark brown, of Morgan breed, owned by Capt. W. A. Newman, Vergennes, Vt., raised in Strafford, Vt.

No. 23. Withdrew.

No. 24. Bill and Peacock, each 6 years, 15 hands, weighing 975 pounds, black, of Morgan breed, owned by A. C. Barrows, Lakeville, Mass., raised in Burlington, Vt.

No. 25. Mate and Hade, each 5 years, owned by W. A. Nichols, South Brookfield, Mass.

No. 26. Pet and Charley, the former 7, the latter 8 years, each 15\(\frac{1}{2}\) hands, weighing 1050 pounds, sorrel, owned by William Landon, Albany, N. Y., and raised in New York State.

No. 27. Pilot and Jack, each 6 years, 16 hands, weighing 1080 pounds, black, the former of Black Hawk, the latter of Hambletonian breed, owned by Henry Kirk White, Boston, and raised in Vermont.

No. 28. Fanny and Billy, each 6 years, weighing 1000 pounds each, sorrel, owned by A. J. Beaumont, Pennsylvania.

No. 29. Kate and Nelly, each 6 years, weighing 975 pounds, the former of Morgan, the latter of Hambletonian breed, bay, and owned by J. H. Tuttle, of Wolcottville, Ct.

No. 30. Major Gifford and Major Morrill, each 5 years, weighing 1,200 pounds, brown, of Morgan breed, owned by Lewis Gale, Barre, Vt., and raised in Vermont.

No. 31. Fanny and Jenny, each 8 years, weighing 1050 pounds, English breed, owned by Jacob Bean, Worcester, Mass., and raised in Westchester Co., N. Y.
No. 32. Duke of Wellington and Lord Nelson, each 5 years, and owned by Eben Alvord, Jr., Holyoke, Mass.

No. 33. John and Charles, the former 6, the latter 7 years, weighing 1,200 pounds, of Vermont, Morgan breed, owned by J. C. Parsons, Agawam, West Springfield, Mass., and raised, the former in Vermont, the latter in Southampton, Mass.

Applications having been made by some of the exhibitors for a transfer of their animals from the class of geldings to that of ponies, the question was brought up, "what constitutes a pony?" Considerable discussion ensued, when, on motion, the President of the United States Agricultural Society appointed a Committee of five to consider and report forthwith upon this point.

The Committee, consisting of the following persons, Solon Robinson, of New York, James M. Hamill, of Philadelphia, Dr. E. Holmes, of Augusta, Me., (Editor of the Maine Farmer,) Geo. M. Atwater, of Springfield, Mass., William S. King, (Editor of the Journal of Agriculture,) Boston, retired and soon reported the following resolution:

"The Committee finally determine, and recommend to the National Agricultural Society to publish as their opinion, that no animal of the horse family should be termed a pony which does not bear the distinctive marks of that breed,—that is, a heavy body, a short head and legs, stout neck, with heavy mane and tail, and not over fourteen hands high; and that in all offers of premiums for this breed of horses, pure pony blood should be taken into account, more than size and height, and such crosses of that breed with those of large growth as come the nearest to the original idea of a pony, for which the Shetland should be kept in view as the type of the race. Those not possessed of the distinctive pony marks, whatever their size, should be ranked as small horses, and not ponies."

*As this recommendation has been commented on by many who do not appear to comprehend its meaning or bearing, the Editor of this number of the Society's Journal has thought it not improper or unnecessary to discuss the matter more fully on a subsequent page.
EXHIBITION OF COLTS.

At eleven o'clock, the bell rang for the exhibition of colts. The following was the

Board of Judges. — Dr. E. Holmes, of Maine, Sheldon P. Leavitt, of New York, George D. Wheeler, of Deposit, N. Y., and J. W. Proctor, of Massachusetts.

The entries were large, and the following is the list.

COLTS — STALLIONS OF THREE YEARS.

No. 1. Young Hambletonian, 16 hands, 1,100 pounds, bay, of Morgan and Signal breed, owned by John R. Briggs, and raised in Massachusetts.

No. 2. Young Tiger, 1000 pounds, of Morgan breed, black, owned by Nathan P. Bartholomew, and raised in Montgomery, Mass.

No. 3. Young Hawk, weighing 875 pounds, of Black Hawk breed, brown, owned by George Bowen, Worcester, Mass., and raised in Vermont.

No. 4. Young Morgan, 1030 pounds, Morgan breed, bay, owned by James Stone, Philipston, Mass., where he was raised.

No. 5. David Hill, 16 hands, 1,100 pounds, Black Hawk breed, black, owned by Edson A. Burchard, Shoreham, Vt., where he was raised.

No. 6. George Washington, 17 hands, 1,400 pounds, Andrew Jackson breed, bay, owned by Jackson Nichols, Flushing L. I., and raised on Long Island.

No. 7. Edgar Hill, 15 hands, 950 pounds, Black Hawk breed, black, owned by Francis Wilson, Hinesburgh, Vt., where he was raised.

No. 8. Duke, 1034 pounds, Messenger breed, bay, owned by Levi Coe, Middletown, Ct., where he was raised.

No. 9. Royal Defiance, 16½ hands, 1,200 pounds, Morgan and English breed, chestnut, owned by E. C. Brooks, Lawrence, N. H., and raised in New Ipswich. N. H.


No. 11. Oneida Chief, 15¾ hands, 1050 pounds, Highlander breed, bay, owned by Barnes Davis, Vernon, Oneida Co., N. Y., where he was raised.
No. 12. Sir Harry, 14½ hands, 985 pounds, Black Hawk breed, black, owned by William Humphrey, New Britain, Ct., and raised in Connecticut.

No. 13. Young Woodbury, 1000 pounds Morgan breed, owned by David Hammond, Reading Vt., where he was raised.

No. 14. Henry, Rattler breed, bay, owned by Joseph Rice, Putney Vt., where he was raised.

No. 15. Jemmy, Rattler breed, bay, owned by Joseph Rice, Putney, Vt., where he was raised.

No. 16. Steep Rock, 14 hands, 930 pounds, Morgan breed, sorrel, owned by George A. Hunn, Hartford, Ct., and raised in Genesee Co., N. Y.

No. 17. Charley, 14 hands, 1,120 pounds, Sir Henry breed, chestnut, owned by S. P. Hunn, Hartford Ct., and raised in Genesee Co., N. Y.

Filleys of Three Years.

No. 1. Fanny Fern, 975 pounds Black Hawk breed, dapple gray, owned by Francis Willson, Hinesburgh, Vt.

No. 2. Columbian Maid, 950 pounds, Kentucky breed, bay, owned by Edmund Bush, Sheffield, Mass.

Stallions of Two Years.


No. 2. Hunter Colt, 1000 pounds, Kentucky Hunter breed, bay, and owned by Mala Cowles, Belchertown, Mass., where he was raised.

No. 3. Lafayette, sorrel, owned by Lorenzo Brewer, Louisiana, and raised in Quebec, Canada.

No. 4. Young Woodbury, 14 hands, 800 pounds, Morgan breed chestnut, and owned by Alonzo Chapman, Vergennes Vt., where he was raised.

No. 5. Young President, 14 hands, 955 pounds, Mambrino breed, dark brown, and owned by Isaac Crispell, Hurley, N. Y., where he was raised.


No. 7. Bill Black Hawk, 15½ hands, 950 pounds, Black Hawk breed, owned by James P. Noxon White Creek N. Y., and raised in Washington Co., N. Y.
No. 8. Royal Duke, 860 pounds, Morgan breed chestnut owned by T. S. Holton Dummerston, Vt., where he was raised.

**FILLIES OF TWO YEARS.**

No. 1. Fan, 940 pounds, Black Hawk breed, brown, owned by John H. Coffing, Great Barrington, Mass., where he was raised.

**STALLIONS OF ONE YEAR.**

No. 1. Louis Napoleon, 15 hands, 900 pounds, Napoleon breed, chestnut, and owned by G. P. Butterfield, East Longmeadow, Mass., where he was raised.

No. 2. Clay, Andrew Jackson breed, and owned by Timothy T. Jackson, Flushing, L. I.

No. 3. Flying Morgan Sprout 13½ hands 650 pounds, Morgan breed, chestnut, and owned by R. M. Adams, Burlington Vt., where he was raised.

No. 4. Tom Thumb, 14 hands, 800 pounds, Black Hawk breed bay, and owned by Nelson Richards, Panton, Vt., where he was raised.

No. 5. Charles, 14 hands, 700 pounds, Black Hawk breed bay, and owned by Capt, W. A. Newman Vergennes, Vt., where he was raised.

No. 6. Young Cassius, brown, Andrew Jackson breed, owned, by Timothy T. Jackson, Flushing, L. I., and raised on Long Island.


These colts passed in review before the Judges’ stand, in the order of classification given in the entries.

**FANCY MATCHED HORSES.**

Came on at twelve o’clock, and the following was the

The following is the list of entries in this department.

**FANCY MATCHED HORSES.**

No. 1. Robin and Eagle, each 6 years, 15½ hands, weighing 950 pounds, the former of Morgan breed, bay color, and raised in Vermont, the latter of Messenger breed, gray color, raised in Kennebec, Me., and owned by James Reed, Palmer, Mass.

No. 2. Sable Sisters, 925 pounds each, Black Hawk breed, black, owned by Josiah Crosby, of Andover, Mass., where they were raised.

No. 3. Major and Eagle, the former 4 years, weighing 1000 pounds, raised in Orwell, Vt., bay, the latter 6 years, weighing 1025 pounds, raised in Arlington, Vt., dappled gray, each 16 hands, of Messenger breed, and owned by L. T. Miner, Rutland, Vt.

No. 4. Judge and Dandy, each 7 years, 15½ hands, 1100 pounds, cream color, and owned by John Rockwell, Winsted, Conn.

No. 5. Charley and Bill, the former 4, the latter 6 years, each 15 hands, 1075 pounds, sorrel, owned by Asahel Judd, Charlemont, Mass., and raised in Shelburne, Mass.

No. 6. Charley and Pet, each 10 years, weighing 1025 lbs., of Morgan breed, brown, owned by F. T. Cordis, Longmeadow, Mass., and raised in Vermont.

No. 7. Polly Ogden and Lady Carleton, each 15 hands, 975 pounds, of Morgan breed, chestnut, owned by John Doty, Montpelier, Vt., and raised in Vermont.

No. 8. Billy and John, each 8 years, 15½ hands, 1000 lbs., the former chestnut, of Morgan breed, the latter gray of Hambletonian breed, — tandem, — owned by Simeon Leland, of New York Metropolitan Hotel, and raised in New York.

No. 9. Bill and Charley, each six years, 15½ hands, 950 pounds, the former black, raised in Vermont, the latter chestnut, raised in Connecticut, and owned by William Hungerford, Wolcottville, Ct.

No. 10. Kate and Jessy, owned by Daniel Strong, Springfield, Mass.

No. 11. Sultan and Tartar, the former 5 years, raised in New Hampshire, the latter 7 years, raised in Maryland, each 13 hands, 900 pounds, of Arabian breed, black and white, and owned by A. Foss, Woodstock, Vt.
No. 12. Kitty and Baby, the former 5 years, of Almack breed, the latter 6, of Abdallah breed, each 15½ hands, 1000 pounds, sorrel, owned by A. N. Hungerford, Wolcottville, Ct., and raised on Long Island.

No. 13. Major and Bill, the former 4 years, of Eclipse breed, the latter 7, of Morgan breed, each 15 hands, 975 pounds, owned by Dr. H. R. Vaille, Springfield Mass., and raised in Vermont.

No. 14. Dandy and Topsy, the former 7 years raised in Warren Co., N. J., the latter 5 years, raised in Monmouth, N. J., each 16 hands, and owned by David Sanderson, Somerville, N. J.

No. 15. Bill and Jo, each 7 years, 15 hands, of Morgan breed, owned by M. B. Field, Stockbridge, the former raised in Vermont, the latter in New York.

No. 16. Fanny and Jenny, each 7 years, weighing 1000 pounds, of Morgan breed, owned by J. Wilcox 2d., Meriden, Ct., the former raised in Middletown, Ct., the latter in Greenfield, N. H.

EXHIBITION OF STALLIONS FROM FOUR TO SEVEN YEARS OLD.

Board of Judges.—Moses Newell, of West Newbury, Ms., James M. Wayne, of Georgia, Judge of U. S. Supreme Court, Benj. Thurston, of Lowell, Mass., Warren Delano, Jr., of New York, James De Wolf Perry, of Bristol, R. I.

In this department the exhibition was fine, and the following is the list of entries:

STALLIONS OF FOUR TO SEVEN YEARS OLD.

No. 1. Raven, 5 years, Black Hawk breed, owned by Robbins Battell, Norfolk, Ct.

No. 2. Falcon, 4 years, Black Hawk breed, owned by Robbins Battell, Norfolk, Ct.

No. 3. French Morgan, 5 years, Morgan breed, bay, owned by Charles Emery, Boston.

No. 4. Withdrawn.

No. 5. Canadian Leopard, 6 years, 18 hands, 1550 pounds, English breed, dappled gray, owned by Ira Griffin, Reading, Mass., and raised in Toronto, Canada.

No. 6. Young Morgan, 4 years, 16 hands, 1200 pounds, Morgan breed, dark bay, owned by M. A. Taylor, Granby, Mass., where he was raised.
No. 7. Flying Cloud, 6 years, Black Hawk breed, and owned by Timothy T. Jackson, Flushing, L. I.

No. 8. Young Hambletonian, 4 years, Messenger breed, owned by Timothy T. Jackson, Flushing, L. I.

No. 9. Woodbury Morgan, 15 years, 1040 pounds, Morgan breed, black, owned by Joshua Scott, Vergennes, Vt., where he was raised.

No. 10. Vermont Boy, 5 years, 15½ hands, 1100 pounds, Black Hawk breed, chestnut, owned by John L. Ramsdell, Shoreham, Vt., and raised in Bridport, Vt.

No. 11. Owned by Orestes Richards, Cummington, Mass., 4 years, chestnut.

No. 12. Phœnix, 6 years, 15¾ hands, 1085 pounds, Black Hawk breed, owned by W. H. Seymour, Hartford, Ct., and raised in Canada.

No. 13. Young Eclipse, 4 years, 15½ hands, 1000 pounds, Morgan breed, and owned by A. Putnam, Holden, Mass., where he was raised.


No. 15. American Eagle, 4 years, 16 hands, 1250 pounds, Andrew Jackson breed, bay, owned by Jackson Nichols, Flushing, L. I., and raised on Long Island.

No. 16. Paul Clifford, 6 years, 15½ hands, 1100 pounds, Black Hawk breed, owned by Charles Hunsdon, Shoreham, Vt., and raised in Bridport, Vt.

No. 17. General Stark, 4 years, 15¾ hands, 1000 pounds, Black Hawk breed, mahogany bay, owned by Francis Wilson, Hinesburg, Vt., where he was raised.

No. 18. Young Black Hawk, 6 years, 16 hands, 1165 pounds, Black Hawk breed, chestnut sorrel, owned by Francis B. Halsey, Austerlitz, N. Y., and raised in Bridport, Vt.

No. 19. Black Hawk Jr., 5 years, 15½ hands, 1100 pounds, Black Hawk breed, and owned by Russell S. Pond, Addison, Vt., where he was raised.

No. 20. Morning Glory, 6 years, 1050 pounds, bay, and owned by Richard Morse, Athol, Mass., where he was raised.

No. 21. Black Hawk, 6 years, 15¼ hands, 975 pounds, Black Hawk breed, black, owned by C. P. Currie, N. Y., and raised in Catskill, N. Y.

No. 22. Flying Morgan, 4 years, 15 hands, 1050 pounds,
Morgan breed, owned by Hiram Gibbs, Petersham, Mass., and raised in Greenwich, Mass.

No. 23. Hambletonian, 4 years, 16 hands, Mambrino breed, bay, owned by Timothy T. Jackson, Flushing, L. I., and raised on Long Island.

No. 24. Withdrawn.

No. 25. Coburg Champion, 4 years, 17 hands, 1475 pounds, English breed, iron gray, and owned by Nicholas Dodge, Coburg, Canada, where he was raised.

No. 26. Cub, 4 years, 14 hands, 1000 pounds, Morgan breed, black, owned by Abel Lyman, West Randolph, Vt., and raised in Orange Co., Vt.

No. 27. Gifford Morgan, 5 years, 15½ hands, 1175 pounds, Hambletonian breed, and owned by Chauncey Greene, Manchester, Vt., where he was raised.

No. 28. Charley May, 5 years, 15½ hands, 1100 pounds, Hickory breed, black, owned by Gideon Tomlinson, Bridgeport, Ct., and raised in Pennsylvania.

No. 29. Green Mountain Morgan Bulrush, 4 years, 14 hands, 970 pounds, bay, and owned by John Paddleford, Hartland, Vt., where he was raised.

No. 30. French Morgan, 4 years, 1050 pounds, bay, and owned by L. S. Manzer, St. Johns, Canada, where he was raised.

No. 31. Cock, 4 years, 15 hands, 1050 pounds, black, owned by J. Marshesseau, St. Johns, Canada, where he was raised.

No. 32. Charley Morgan, 4 years, 15 hands, 950 pounds, Morgan breed, and owned by R. Hubbard, Holden, Mass., where he was raised.

No. 33. Constitution, 7 years, 1065 pounds, Whalebone breed, owned by A. B. Wilton, Boston.

The horses trotted back and forwards before the Committee, many of them presenting a beautiful appearance. At the end of the time allowed for this exhibition, those who desired were allowed to drive twice round the course. This was one of the most exciting scenes of the day, as nearly all availed themselves of the opportunity, and as they drove furiously round, often three abreast, amid the cheers of the spectators, the scene stirred the blood, and the days of the tournaments seemed to have
returned. The Committee proceeded to make a more particular examination on the North side of the field.

At 3 o'clock the bell sounded for the

EXHIBITION OF GELDINGS.


This class was exhibited in the same manner as the others, and the following is the list of entries:

GELDINGS.


No. 2. Black Henry, 7 years, 15½ hands, 1050 pounds, Henry Clay breed, black, owned by George R. Wesson, Worcester, Mass., and raised in Genesee.

No. 3. Jim, owned by George Dwight, Springfield.

No. 4. Col. Fremont, 5 years, 15¾ hands, 1050 pounds, Hambletonian breed, bay, owned by J. L. Briggs, Springfield, and raised in New Haven, Vt.

No. 5. Entered by O. G. Tinkham, North Bridgewater, Mass., and raised in Canada.


No. 7. Daniel Webster, 6 years, 1085 pounds, Morgan breed, chestnut, and owned by Ebenezer Flagg, Worcester, Mass.

No. 8. Novelty, 5 years, 15 hands, 1000 pounds, Morgan breed, dark bay, owned by H. Ball, New York, and raised in Vermont.

No. 9. Flash, 4 years, Morgan breed, chestnut, owned by R. Shurtleff, Bellows Falls, Vt.

No. 10. Owned by Horatio Cowles, Farmington, Ct., bay, 7 years.

No. 11. Withdrawn.

No. 12. Black Hawk, 6 years, 15½ hands, 984 pounds, Black Hawk breed, black, owned by E. Foster Cook, Rutland, Vt., where he was raised.
No. 13. Henry, 5 years, 16⅛ hands, 1235 pounds, Henry breed, chestnut, owned by Miner & Cook, Rutland, Vt.


No. 15. Owned by O. G. Tinkham, North Bridgewater, Ms.

No. 16. Percy, 7 years, 1100 pounds, bay, owned by R. W. Fowler, West Meriden, Ct., raised in Ohio.


No. 18. Bill, 8 years, 16 hands, 1070 pounds, Black Hawk breed, owned by Dr. J. R. Wilbur, Chicopee Falls, Mass., and raised in Randolph, Vt.


No. 21. Owned by Robbins Battell, Norfolk, Ct.

No. 22. Morgan Lion, 15 years, 14 hands, 900 pounds, Morgan breed, owned by Dr. A. Lambert, Springfield, Mass., and raised in Maine.

No. 23. Major, 16 hands, 1200 pounds, black, and owned by George Bliss, Jr., Springfield, Mass.

No. 24. Billy Gray, 5 years, 15 hands, 970 pounds, Black Morgan breed, owned by Francis Twitchell, Jr., Petersham, Ms., where he was raised.

No. 25. Jim, 9 years, 16 hands, 1260 pounds, Morgan breed, bay, owned by S. E. Bailey, Springfield, Mass., and raised in Vermont.

No. 26. Frank Pierce, 5 years, 16 hands, 1125 pounds, Hambletonian breed, chestnut, owned by Josslyn & Eldridge, Greenfield, Mass., and raised in Huntington, Vt.

No. 27. Nick Biddle, 5 years, 15½ hands, 1000 pounds, English blood, bay, owned by Josslyn & Eldridge, Greenfield, Mass., and raised in Vermont.

No. 28. Prince, 5 years, 15½ hands, 1000 pounds, English blood, and owned by Parker W. Cole, Exeter, Me., where he was raised.


No. 30. Nimrod, 5 years, Black Hawk breed, black, owned by G. H. Gilbert, Ware, Mass.

No. 32. Buckskin, 5 years, 16½ hands, 1300 pounds, Morgan breed, buckskin color, owned by Smith & Palmer, West Springfield, and raised in Rochester, N. Y.


No. 34. Honest Bill, 6 years, 14 hands, 1020 pounds, owned by Henry Burt, Springfield, and raised in Indiana.

No. 35. Billy, 6 years, 15 hands, 1100 pounds, bay, owned by M. Wheelock, Thompsonville, Ct.

No. 36. Jim, 5 years, 1060 pounds, dappled gray, owned by J. S. Davis, Holyoke, Mass.

No. 37. Bill Barlow, owned by John F. Sprague, Windsor Locks, Ct.

No. 38. Roebuck, 6 years, owned by H. A. Grant, Enfield, Conn.

No. 39. Tiger, 8 years, 1000 pounds, Morgan breed, chestnut, owned by Edmund Boynton, Boston.


No. 41. Jim, 6 years, 15¾ hands, grey, owned by D. L. Harris, Springfield, and raised in Steuben Co., N. Y.

No. 42. A dappled gray, owned by William Birnie, Springfield, Mass.

No. 43. Vanderbilt, 5 years, 15 hands, 925 pounds, Morgan breed, bay, owned by George Lovejoy, Lowell, Mass., and raised in Stoddard, N. H.

No. 44. Rock, 10 years, 15 hands 1000 pounds, Morgan breed, bay, owned by J. T. Rockwood, Springfield Mass., and raised in N. Y.

No. 45. A chestnut horse of 8 years, entered by H. H. Granger, Hardwick, Mass.

No. 46. Mayfly, 7 years, English breed, chestnut, owned by J. S. Robinson, Springfield, Mass.

No. 47. Withdrawn.

No. 48. Morgan, 7 years, 16 hands, 1150 pounds, Morgan breed, owned by J. B. Christy, Boston, and raised in Petersham.

No. 49. Jackson, 6 years, 15¾ hands, 1000 pounds, Mes-
senger breed, bay, owned by J. B. Christy, Boston, and raised in Paris, Me.

No. 50. Billy, six years, 16½ hands, 1200 pounds, dark bay, owned by A. Hobbs, Boston, and raised in Mass.

No. 51. Charley, 5 years, 15¼ hands, 1050 pounds, Morgan and English breed, bay, owned by H. S. Chappel, Boston, and raised in Bridport, Vt.

No. 52. Grey Eagle, 6 years, 17 hands, 1200 pounds, Messenger and Morgan breed, gray, owned by G. W. Bailey, Boston, and raised in Canaan, Vt.

No. 53. Sam, 6 years, 15½ hands, 1000 pounds, French breed, roan, owned by J. Sawtelle, Turner, Me., where he was raised.

No. 54. Charley, 8 years, 16½ hands, 1300 pounds, cream, owned by William Cushman, New Braintree, Mass., and raised in New York State.

No. 55. Black Hawk, 7 years, 16½ hands, 1200 pounds, Black Hawk breed, black, owned by H. Sargeant, Springfield, Mass, and raised in Middlebury, Vt.

No. 56. Swiss Boy, 4 years 15½ hands, 1100 pounds, Highlander breed, gray, owned by William P. Paff, Albany, N. Y., where he was raised.

No. 57. Dutchman, 7 years, 16 hands, 1000 pounds, Duroc breed, bay, owned by William P. Paff, Albany, N. Y., where he was raised.

No. 58. Breck, 8 years, 16 hands, 1100 pounds, Hambletonian breed, bay, owned by Wells P. Hodgett, Springfield, Mass., and raised in Shelburne Falls, Mass.

No. 59. Bill Morgan, 7 years, 15½ hands, 1100 pounds, Morgan breed, owned by Dr. H. R. Vaille, Springfield, Mass., and raised in Vernon, Vt.

No. 60. Sir Thomas, 7 years, 900 pounds, Black Hawk breed, and owned by B. Atwater, Berlin, Ct.


No. 62. Charley, 5 years, 16 hands, 950 pounds, sorrel, owned by Shepard E. Ellis, of Pennsylvania, where he was raised.

No. 63. John, 4 years, 1150 pounds, Sir Henry breed, bay, owned by Ransom Reed, Hartford, Connecticut, and raised in Maine.

No. 64. Charley, 6 years, 16 hands, 1200 pounds, Messen-
ger breed, bay, owned by S. M. Dart, Springfield Mass., and raised in Maine.

No. 65. Young Tom, 8 years, 15½ hands, 1108 pounds, Morgan breed, chestnut, owned by F. T. Cordis, Longmeadow, Mass., raised in Maine.

No. 66. Bill, six years, 1035 pounds, Morgan breed, bay, owned by A. H. Jerome, Bloomfield, Conn.

No. 67. Black Sam, 6 years, 16 hands, 1050 pounds, Black Hawk breed, black, and owned by E. Hubbard, Montpelier, Vt., where he was raised.

No. 68. Capt. Swazey, 6 years, 16 hands, 1075 pounds, Morgan breed, bay, and owned by E. Hubbard, Montpelier, Vt., where he was raised.

No. 69. Tiger, 6 years, 16 hands, 1250 pounds, gray, owned by Horace Kibbe, Springfield Mass. and raised in Mass.

No. 70. Lion, 10 years, 15 hands, 1050 pounds, bay, Hunter breed, owned by H. B. Crane, Springfield, Mass., and raised in Mass.

No. 71. Squirrel, 4 years, 15½ hands, 1040 pounds, French breed, sorrel, owned by J. Hubbard, Hartford, Ct., and raised in Strafford, Vt.

No. 72. Prince, 6 years, 15½ hands, 1050 pounds, Black Hawk breed, black, owned by Charles Robinson, Fishkill Plains, N. Y., and raised in Columbia Co., N. Y.

No. 73. Joe, 5 years, 15½ hands, 950 pounds, French and Messenger breed, gray, owned by J. P. Currie, N. Y., and raised in Rensselaer Co., N. Y.

No. 74. Withdrawn.

No. 75. Joker, 6 years, 16½ hands, 1340 pounds, Mambri-no breed, dappled gray, and owned by Homer Briggs, Pine Plains, N. Y., where he was raised.

No. 76. Poker, entered by Edmund Ashley, West Springfield, Mass.

No. 77. Henry, 6 years, entered by Henry Adams, Lowell, Mass.

No. 78. Doctor, 7 years, 16 hands 1150 pounds, St. Lawrence breed, bay, owned by James Buffum, Montreal, and raised in Hatley, Canada.

No. 79. Ignatius, 7 years, 15 hands, 1100 pounds, Black Hawk breed, bay, owned by John Goodrich, Springfield, Mass., and raised in Vermont.
No. 80. Spring, 5 years, 16¼ hands, 1050 pounds, English breed, and owned by John Goodrich, Springfield, Mass.

No. 81. Black Jim, 5 years, entered by Elisha Tileston, Haydenville, Mass.

No. 82. Telegraph, 8 years, 14 hands, 875 pounds, English and Morgan breed, chestnut, owned by E. Sampson, West Middleboro', Mass.

No. 83. Charley, 7 years, entered by John Parks, Chester Village, Mass.

No. 84. Major, 6 years, 16 hands, 1200 lbs., Black Hawk breed, chestnut, owned by Mr. Green, Amsterdam, N.Y., and raised in Duchess Co., N. Y.

No. 85. Snowball, 5 years, 15½ hands, 950 pounds, Messenger breed, white, owned by William Beardsley, Albany, N.Y., and raised in Chenango Co., N. Y.

No. 86. George Dawson, 6 years, 15½ hands, 950 pounds, Don Juan breed, owned by William Beardsley, Albany, N.Y., and raised in Vermont.

No. 87. Black Bill, 6 years, 14½ hands, 965 pounds, Morgan breed, owned by Henry Kirk White, Boston, and raised in Vermont.

No. 88. Charley, 6 years, 16 hands, 1030 pounds, Morgan breed, brown, owned by Henry Kirk White, Boston, and raised in New Hampshire.

No. 89. Tiger, 5 years, 1080 pounds, Messenger breed, gray, and owned by A. L. Phillips, Adams, Mass.

No. 90. Henry, 6 years, 16½ hands, 1250 pounds, Sir Henry breed, bay, owned by S. Wilcox, Lanesboro', Mass., and raised in Vermont.

No. 91. Old White, entered by E. Savage, Springfield, Mass.

No. 92. Skinpole, 10 years, bay, owned by W. C. McClallan, Chicopee.


No. 94. Rat, entered by John Pierce, Hartford, Ct.

No. 95. Governor, 7 years, 1103 pounds, Morgan breed, owned by S. W. Wilson, Bellows Falls, Vt.

No. 96. Tom, 8 years, 1300 pounds, Napoleon breed, sorrel, entered by Walter Tracy, Pittsfield, Mass.

No. 98. Black Prince, 4 years, 15 hands, 925 pounds, Black Hawk breed, black, owned by Jeremiah Sheldon, Jr., Burrillville, R. I., and raised in Vermont.

No. 99. Dutch, 6 years, owned by E. & E. A. Rice, West Meriden, Ct.

No. 100. The Doctor, 7 years, owned by George H. Babcock, of Lee, Mass.


No. 102. Charley, 7 years, 960 pounds, French breed, owned by Barnett Howe, North Brookfield, Mass., and raised in Canada.

No. 103. Flying Buckskin, 6 years, 15 hands, 950 pounds, owned by L. H. Dumas, Concord, N. H.

No. 104. Charley, 6 years, 1050 pounds, owned by F. Arnold, Westminster, Vt., and raised in Cayuga Co., N. Y.

No. 105. Bill, 10 years, owned by D. W. Lane, West Springfield, Mass.

No. 106. Fancy Model, 7 years, 16 hands, 1025 pounds, Morgan breed, and owned by Euclid Chadsey, Wickford R. I.

No. 107. Prince, 5 years, 16 hands, 1150 pounds, Blucher breed, owned by Wm. P. Lathrop, Conway, Mass., and raised in Genesee Co., N. Y.


No. 109. Major, 4 years, 16 hands, 1100 pounds, Morgan breed, bay, owned by F. Wilson, Hinesburgh, Vt., and raised in Hyde Park, Vt.

The show of Geldings was, on the whole, very fine. There were few of the "fast horses" on the field; but the animals exhibited were, almost without a single exception, excellent;—fine roadsters, with a spanking 3:20 trot, well-knit and sinewy chaise and carriage horses, and lithe and pliant nags for the saddle. We were sorry to notice many, however, affected with ring-bone; and to the inquiries of the Committee on this point, the almost invariable answer was, "he was foaled so." This would substantiate, if it needed proof, our position in another article in this
No. of the Society's Journal, that affections of this nature are inheritable.

With so great a number of entries in one class, with but four premiums at their disposal, it was almost impossible for this Committee to do justice to all. As competitors for these four premiums, there were, first, horses possessing great speed; others challenging one's admiration by their elegance of form or gait; others, again, were horses of all work, fitted for the family carry-all or the chaise, or at need the market wagon or the plow. Of these, a good judge might select, as superior in his estimation to both others, the fast-goer; while another person, equally capable, would prefer the horse whose fine figure filled his eye; and a third would choose the family horse.

A third or fourth premium is little estimated; indeed, the taking of such a one is usually concealed, for it is proof of inferiority. We would suggest, then, a larger number of first premiums—one for each class of animal which a Society shall deem worthy of encouragement,—and fewer premiums of the third and fourth grades.

In the evening of this—the second day of the Show—Mr. George M. Atwater, of Springfield, who entertained the President of this Society, invited the guests of the occasion, the members of the press, and a large number of the citizens of the place, to meet Mr. Wilder at his mansion. His elegant hospitality was not one of the least pleasing features of this memorable meeting.

THIRD DAY.

FRIDAY, OCTOBER 21.

At 9 o'clock, the pageant and grand entree of the first day, which so delighted all, was repeated; which being ended, the first business in the order of Exercises was

THE EXHIBITION OF PONIES.

The following comprises the list of entries:

Ponies.

No. 1. Kitty, 4 years, 750 pounds, Black Hawk, brown, raised in Wardsboro, Vt., Fanny, 4 years, 800 pounds, Morgan, brown, raised in Shelburne, N. Y., owned by J. L. Briggs, of Springfield.

No. 2. Withdrawn.

No. 3. Charley and Jack, 7 and 8 years, 1280 pounds, Indian breed, bay, owned by Warren Daniels, of Bellows Falls, Vt., raised in Canada.

No. 4. Venus and Jupiter, 4 and 2 years, Shetland, black and sorrel, owned by W. Jay, Jr., N. Y., raised in Westchester Co., N. Y.

No. 5. Zanzibar, 8 years, 4 hands high, 400 pounds, bay, owned by Daniel P. Riley, of Salem, raised in Hindostan.

No. 6. Tom and Jerry, 8 and 7 years, 13 hands, 850 and 800 pounds, owned by L. V. H. Crosby, of Springfield, raised in Canada.

No. 7. Syren, 6 years, 14 hands, 800 pounds, Black Hawk, owned by H. Belden, of Hartford, Ct., raised in Rutland, Vt.

No. 8. Charley, 7 years, 875 pounds, Morgan, owned by John Chase, of Chicopee, raised in Deerfield Mass.

No. 9. Sorrel pony, 7 years, owned by James Bird, of Hartford, Ct.

No. 10. Jenny, 5 years, 14 hands, 750 pounds, Native, bay, owned by H. S. Chappel, of Boston, raised in Maine.

No. 11. Black Hawk, 5 years, 14 hands, 800 pounds, Black Hawk, black, owned by James Reed, of Palmer, raised in Vermont.

No. 12. Cock Robin, 6 years 13½ hands, 850 pounds, Morgan, white, owned by U. Bowen, of Richmond, N. H., raised in Canada.

No. 13. Nancy and Sally, 8 years, 14 hands, 1500 pounds, sorrel, owned by John Moulton, of Framingham, Mass., raised in Vermont.


No. 15. Flying Indian, 8 years, 14½ hands, 850 pounds, Indian breed, chestnut, owned by P. T. Kirby, Saratoga County, N. Y.

No. 17. Waterville Maid, owned by E. B. Lyman, of Easthampton, Mass.

No. 18. St. John, 6 years, 13½ hands, 850 pounds, brown, owned by Charles Demerse, of Canada.

No. 19. Mac, 7 years, 12 hands, 700 pounds, Indian breed, bay, owned by L. H. Clapp, of Easthampton, Mass., raised in Vermont.

No. 20. Bill, Morgan breed, owned by Horace Ensworth, of Hartford, Ct.

No. 21. Ned, 4 years, 500 pounds, Indian breed, gray, owned by Warren Higley, of New Hartford, Ct., raised in Canada.

The Executive Committee of the Society having been notified that the local Board of Managers had a communication to make to them, met in the tent which had been erected for their use on the field; when Mr. George M. Atwater, in behalf of the board, offered the following resolution, which they had unanimously passed, for the consideration of the Executive Committee:

Resolved, That we present to the United States Agricultural Society our hearty thanks for their co-operation in carrying forward to its successful termination, the First National Exhibition of Horses in the world, and that we respectfully request them to unite with us in promoting a second exhibition of a similar character, to be held, under their auspices, in this city, in the year 1854, at such time and under such arrangements as may be deemed expedient.

The resolution was accepted by the Committee for further consideration. The question of another exhibition, and the place of holding it, with other matters thereto relating, will undoubtedly be called up at the annual meeting, on the last Wednesday in February next.

George Bliss, Jr., John L. King and S. A. Clemens, were appointed by the local Board, a Committee to confer with the United States Agricultural Society, on this point.
Dr. Weston, of Washington, then offered the following resolution, which was unanimously adopted:

Resolved, That the thanks of this Executive Board be, and are, presented to the editors of the Springfield Republican; to the several reporters of the city and country papers present; and also to the local Board of Springfield; and to the citizens of Springfield in general, for their attentions and hospitalities during the stay of the Executive Committee of the United States Agricultural Society in their beautiful city, and for the conception and perfection of this magnificent Exhibition.

The ponies having been exhibited on the track to the satisfaction of the Judges, were ordered to the north end of the field for further examination; and then followed

THE EXHIBITION OF THOROUGH-BREDS.


THOROUGH-BRED HORSES.

No. 1. Topsey, 7 years, 16 hands, 1180 pounds, bay, raised in England, and owned by C. A. Cuthbut, Canada.

No. 2. Jehu Cricket, standard height, imported, sire unknown, dam dead, owned by amateur association in Springfield.

No. 3. Utah, 5 years, 16½ hands, 1350 pounds, dappled gray, owned by A. Hobbs, Boston, Mass.

No. 4. Bob Logic, 10 years, 15½ hands, 975 pounds, dark bay, owned by J. R. Hutchins, of Montreal, Canada.

No. 5. Lady Digby, 11 years, 15½ hands, chestnut, owned by James Turner, of Boston.

No. 6. Jenny Lind, 6 years, 15 hands, black, owned by A. L. Bingham, of Cornwall, Vt.

No. 7. Lady Sussex, 6 years, 16½ hands, 1100 pounds, bay, owned by Dr. J. G. Bunting, of Lewis Co., N. Y.

These, also, held possession of the course until the Board of Judges had enjoyed ample opportunity to observe and mark their
action and speed; when they followed the ponies on their northern tour, to make room for the

EXHIBITION OF STALLIONS OF SEVEN YEARS OLD AND UPWARDS.

The entries in this class were decidedly good; but it was a matter of regret to many, that some of the most beautiful and some of the most speedy of these stallions were under-sized. Beauty and speed, desirable as they are, are not the only qualities which the American requires in a horse; we need also size and strength, for the horse of all work;—as the horses of most men in this country must of necessity be. The want of size in the stallions,—though in most cases, to be deplored,—would not cause so much regret, if we could find hope for the next generation, in the superiority of the mares, to be served by them. But, alas! the mares, as a general thing, are unworthy of the smallest and least excellent of the stallions.

Board of Judges.—Hon. John M. Botts, Richmond, Va., Chairman; Major James M. Hamill, Philadelphia, Penn., David Aiken, Greenfield, Mass.; S. F. Dupont, Brandywine, Del.; Col. Thomas Adams, Roxbury, Mass.

STALLIONS.


No. 2. Withdrawn.

No. 3. Othello, 16 hands, 1165 pounds, Eclipse breed, black, owned by E. Bush, Sheffield, Mass.

No. 4. Imaum, Arabian breed, presented by the Imaum of Muscat, to David Pingree, of Salem, and now owned by David Elder, of Gorham, Me. [Did not appear; accidentally prevented from coming.]

No. 5. Bush Messenger, 12 years, 17½ hands, 1500 pounds, Messenger breed, owned by Hiram Reed, Augusta, Me., and raised in Winthrop, Me.

No. 6. Lone Star, 7 years, 15 hands, 1000 pounds, Black Hawk breed, black, owned by H. Ball, N. Y.

No. 7. Withdrawn.

No. 8. Sultan, 8 years, 15 hands, 1000 pounds, Arabian breed, gray, owned by Leavitt & Miller, of Salem, and raised in Topsfield, Me.
No. 9. Prince, 7 years, 14½ hands, 1000 pounds, Arabian breed, gray, owned by Leavitt & Miller, of Salem, and raised in Topsfield, Mass.

No. 10. Tartar, 7 years, 15½ hands, 1000 pounds, Arabian breed, gray, owned by Leavitt & Miller, of Salem, and raised in Topsfield, Mass.

No. 11. Bay State Morgan, 8 years, 15½ hands, 1090 pounds, Morgan breed, bay, owned by John Chapin, of Greenfield, Mass.

No. 12. Black Hawk, 10 years, 15½ hands, 1200 pounds, Black Hawk breed, black, owned by S. C. Hall & Co., Manchester, N. H.

No. 13. Chief Justice, 16 hands, 1250 pounds, French breed, dappled gray, owned by J. Melliman, Greenwich, N. Y.

No. 14. Lion, 7 years, 17 hands, 1450 pounds, Lion breed, bay, owned by W. S. Evans, Boston, and raised in Delaware Co., N. Y.

No. 15. ——, 8 years, Morgan breed, chestnut, raised and owned by O. Gould, of Ware, Mass.

No. 16. Wagner, 8 years, 16½ hands, 1200 pounds, English breed, black, owned by W. Reed, of Tariffville, Ct.

No. 17. Young Napoleon, 8 years, 16 hands, 1300 pounds, imported, mole color, owned by R. Pease, of Warehouse Point, Conn.

No. 18. American Eagle, 7 years, 16 hands, 1200 pounds, Eclipse breed, dappled gray, owned by E. S. Morrow, of Suffield, Ct., and raised in Otsego Co., N. Y.

No. 19. George Washington, 7 years, 16 hands, 1,200 pounds, Morgan breed, bay color, owned by E. S. Morrow, of Suffield, Ct., and raised in Montgomery Co., N. Y.

No. 20. Cassius M. Clay, 9 years, 16 hands, 1100 pounds, Andrew Jackson breed, brown, owned by J. H. Godwin, of N. York.

No. 21. John Anderson, 7 years, 1050 pounds, Hambletonian breed, gray, owned by and raised by C. P. Currie, Champlain Co., N. Y.

No. 22 and 23. Withdrawn.

No. 24. Sir Charles, 7 years, 16 hands, 1450 pounds, Sir Charles breed, bay, owned by Thomas Gregen, of Ballston, N. Y., and raised in Ticonderoga, N. Y.

No. 25. Bay Kentucky, 10 years, 16 hands, 1200 pounds,
Highlander breed, bay, owned by H. A. Longley, of Belchertown, Mass., and raised in Oneida Co., N. Y.

No. 26. Hunter, 8 years, 15\(\frac{1}{2}\) hands, 1225 pounds, Oscar breed, bay, owned by Wm. Olcott, of Albion, Mich., and raised in Kentucky.

No. 27. Black Warrior, 8 years, 16\(\frac{1}{2}\) hands, 1200 pounds, Messenger breed, black, Oscar breed, owned by E. S. Kelly, of Rutland, Vt.

No. 28. Black Morgan, 8 years, 14\(\frac{1}{2}\) hands, 1083 pounds, Morgan breed, black, owned by F. Twitchell, of Petersham, Mass.

No. 29. Young Morgan, 8 years, 16 hands, 1150 pounds, Morgan breed, dappled gray, owned by B. G. Putnam, Orange, Mass.

No. 30. Lafayette, 7 years, 16 hands, 1125 pounds, Morgan breed, bay, owned by N. Whiting, Watertown, Mass., and raised in N. York.

No. 31. Young Black Hawk, 7 years, 15\(\frac{1}{2}\) hands, 1100 pounds, Black Hawk breed, chestnut, owned by E. L. Kingsley & Co., of Springfield.

No. 32. Jersey Prince, 10 years, 17 hands, 1130 pounds, French and English breed, black, owned by Charles C. Tappan, of Bradford, N. H., and raised in N. Y.

No. 33. Green Mountain Morgan, 8 years, 1225 pounds, black, owned by B. Bagg, of Ludlow, Mass.

No. 34. Ashuelot Morgan, 9 years, 16 hands, 1300 pounds, Morgan breed, chestnut, owned by Taft & Bowen, of Richmond, N. H.

No. 35. General Putnam, 7 years, 16 hands, 1050 pounds, Arabian and English breed, sorrel, owned by J. McClellen, of Woodstock, Ct.

No. 36. ———, 7 years, 15\(\frac{1}{2}\) hands, 1050 pounds, Morgan and English breed, black, owned by Mr. Matthews, of Roxbury.

No. 37. Rattler, 9 years, 16 hands, 1100 pounds, Hambletonian breed, bay, owned by J. Bigart, of Kingsbury, N. Y., and raised in Vermont.

No. 38. Morgan Lion, 10 years, 15\(\frac{1}{2}\) hands, 1250 pounds, Morgan breed, sorrel, owned by S. M. Dart, of Springfield, Mass., and raised in Canada East.

No. 39. Flying Morgan, 10 years, 14 hands, 900 pounds, Morgan breed, bay, owned by R. M. Adams, of Burlington, Vermont.
No. 40. Morgan Miller, 7 years, 15½ hands, 1150 pounds, Morgan breed, chestnut, owned by Lewis Clark 2d., of Cole- raine, Mass.

No. 41. Deerfield Morgan, 7 years, 15 hands, 1113 pounds, Morgan breed, chestnut, owned by F. A. Wier, of Walpole, N. H.

No. 42. Louis Napoleon, 7 years, 14½ hands, 975 pounds, Morgan breed, chestnut, owned by O. H. Hinckley, of Hamp- den, Me.

No. 43. Vermont Morgan, 8 years, 15 hands, 1100 pounds, Morgan breed, black, owned by J. Ayres, Grafton, Vt.

No. 44. Morrell horse, 10 years, 16½ hands, 1225 pounds, Morgan breed, black, owned by F. Morrell, of Danville, Vt.

No. 45. Morgan horse, 7 years, owned by H. & A. Smith, of Palmer, Mass.

No. 46. Withdrawn.

No. 47. Kennebec Messenger, 7 years, 16 hands, 1175 lbs., Messenger breed, dappled gray, owned by G. M. Robinson, Au- gusta, Me.

No 48. Clyde Briton, 8 years, 17 hands, 1670 pounds, English, gray, owned by N. Doige, of Coburg, Canada.

No. 49. Genesee Gray, 7 years, 16½ hands, 1350 pounds, Genesee Gray breed, gray, owned by J. Mosher, Saratoga, N. Y., and raised in Erie Co., N. Y.

No. 50. Gifford Morgan, 9 years, 15½ hands, 1092 pounds, Morgan breed, bay, owned by E. Pike, of Cornish, N. H.

No. 51. Chesterfield Morgan, 7 years, 15 hands, 1100 pounds, Morgan breed, bay, owned by E. B. Cavender, of Keene, N. H.

No. 52. Brown Trafalgar, 11 years, 16 hands, 1100 pounds, Foreign and Messenger breed, roan, owned by C. Zelley, N. Jersey.

No. 53. Hambletonian Morgan, 7 years, 17 hands, 1251 pounds, Morgan breed, chestnut, owned by A. A. Alee, of Lon- donderry, Vt.

No. 54. Emperor, 9 years, 16 hands, 1200 pounds, Messenger and Arabian breed, gray, owned by J. Barstow, of Bridge- port, Ct.

No. 55. Washington Gray, 7 years, 15½ hands, 1110 pounds, Messenger breed, owned by A. C. Upton, of N. Hampshire.

No. 56. Montgomery Tiger, 7 years, 15½ hands, 1000 pounds, chestnut, owned by H. Winchell, of Lanesboro', Mass.
After all had passed singly before the Board of Judges, they were ordered to pass three times around the track, which they all did, at the top of their speed, presenting a lively and exciting spectacle. They then went around on a walk, and hauled off the track.

We have been requested by this Committee to state that the horse Louis Napoleon, (No. 42) owned by O. H. Hinckley, of Hampden, Me., was awarded a complimentary gratuity of $25, which does not appear among the awards. This beautiful and speedy animal, it was thought by many, would receive the first premium in this class. He had beaten the favorite, Cassius M. Clay, (No. 20) in a trial of speed; and won golden opinions from the thousands who witnessed his gallant bearing; but in an unfortunate moment, he in some way, so injured his leg or foot, that his owner was forced to withdraw him from the field.

With the Exhibition of these Stallions closed the exercises of the day on the track.

At about 2 o'clock, a procession was formed in the following order:—

1. Springfield Brass Band, led by the Chief Marshal.
2. The President of the day, with the Executive Committee of the U. S. Agricultural Society.
3. Invited guests.
4. Members of the various State Agricultural Societies present.
5. Editors and Reporters for the press.
7. Gentlemen with ladies.
8. Exhibitors of horses.

The procession entered Wright's Mammoth Tent, at a quarter before 2 o'clock, to partake of the Grand Agricultural Banquet.

The entertainment provided was set forth on lines of well laid tables, extending the whole length of the tent; the tables provided
for the dignitaries of the occasion being elevated at one side. The appearance of the tables was very neat and tasteful, and the repast well prepared. — Fruit, mostly pears and grapes of the choicest character, abounded. A large number of ladies were present and formed a fine array through nearly one entire line of tables; and added beauty and inspiration to the scene. Plates were laid for 1,773 guests, and nearly all of them were occupied. Marshall P. Wilder, the President of the Day, assumed the chair, supported on the left by Abbott Lawrence, while Governor Horatio Seymour, sat at his right. John Minor Botts, and Ex-Governor Floyd, of Virginia, Ex-Governor Colby, of New Hampshire, C. P. Holcombe, of Delaware, and many other distinguished visitors, occupied prominent places.

The President called upon Rev. R. H. Seeley, of Springfield, to implore the divine blessing upon the assembly and the feast, and after joining in the aspiration, the multitude rapidly transferred the weight upon the tables to the seats. The knives and forks had scarcely ceased their clatter when the President arose, and said:

**Speech of Mr. Wilder.**

*Ladies and Gentlemen.* — We meet to celebrate by the festivities and social services of the passing hour, the interesting exhibition which has brought us from our different and distant homes, to this fertile valley, and to this beautiful and thriving city.

In behalf of the local board of managers and their associates, whose wisdom devised the plan of this exhibition, whose liberality secured the requisite means for its accomplishment, and whose energy and perseverance have carried it forward to this happy consummation, I bid you *Welcome.*

In behalf also of the United States Agricultural Society, under whose auspices this exhibition has been held, I present you our cordial salutations; and I am most happy to express my sincere gratification at the presence of so many of the fair helpmeets of man.

Ladies, I greet you with a right hearty welcome. Your presence adds beauty and brilliancy to such scenes. The smile of your approbation imparts encouragement to our efforts, confidence
to our hopes, and success to our labors. We therefore bid you
thrice welcome to the joys and pleasures of this festive board.

Friends and fellow citizens, We have assembled to honor the
great cause of agriculture, that most important pursuit upon
which depends the welfare not only of one art or profession, of
an individual or nation, but of all classes of civilized society; the
art which unsurls the sails of commerce, which makes the flag
of a nation the symbol of wealth, prosperity and power, and
which moves the machinery of the world.

I congratulate you upon the presence of our honored guests,
of gentlemen distinguished in the various departments of politics,
literature, science and religion, who have assembled to encourage
by their presence, approbation and eloquence, the good cause
which we seek to advance. I congratulate you, also, on the in-
creasing zeal exhibited throughout our country by the various
local agricultural associations, which are laboring with laudable
ambition to promote this world-renowned art — on the improved
systems of cultivation, and the relief which genius has brought
to labor, by the invention of new and far-famed implements of
modern culture.

I observe favorable omens in the general appreciation and pat-
ronage of our county, state and national societies, harmoniously
and systematically co-operating in this worthy cause, and in the
great interest manifested in this and other annual exhibitions;
these gala days of the farmer, where party strife and sectional
jealousy are exchanged for friendly salutations and the kindlier
amenities of life; and where all meet upon the common ground
of good citizenship to exalt and improve the primeval and noblest
employment of man.

In the annual exhibition of these societies we are presented
with such a variety of the products of industry, taste and genius,
that we find it quite difficult to take the whole in at one view,
and to do justice to every part. But on the present occasion we
have been relieved from this difficulty, and our attention has
been concentrated upon one department, a particular species of
domestic animals,— upon the horse, whose docility, beauty and
usefulness have been admired by the successive generations of
mankind — whose kindness, strength and valor, have been celebrated in prose and verse, in history, and in holy writ. How truly and beautifully inspiration describes him on the tented field!—“His neck is clothed with thunder, the glory of his nostrils is terrible. He paweth in the valley and rejoiceth in his strength. He goeth to meet the armed men. He mocketh at fear and is not affrighted, neither turneth he back from the sword. He swalloweth the ground with fierceness and rage. He saith among the trumpets, ha! ha! and he smelleth the battle afar off.”

Of this noble animal, probably the world never witnessed a better and more extensive exhibition than it has been our privilege to examine on this occasion.

There have been placed on exhibition about 500 specimens of the various breeds, many of which are of great merit and fame.

In conclusion, permit me to present to the originators and managers of this exhibition, and especially to the good people of the city of Springfield, my most sincere and grateful acknowledgements for their hospitality, and for the important service which they have rendered to this department of American agriculture.

Gentlemen, may your present success awaken a laudable emulation in this and other departments of agricultural economy; and thus may we go on prospering and to prosper, until all the pursuits of industry and rural taste shall have attained a perfection never before realized, and shall render the United States of America the most intelligent, prosperous and happy people on the globe.

I propose, ladies and gentlemen, the first regular toast:

The State of New York. — Renowned for the intelligence, wealth and enterprise of her sons, but equally so for the urbanity, energy and ability of her chief Magistrate.

SPEECH OF GOV. SEYMOUR, OF NEW YORK.

Governor Seymour,—who was received with three hearty cheers, replied to this toast substantially as follows:—I do not know if I ought on this occasion to regard myself as being out of the jurisdiction of New York. Those who founded the col-
ony which became subsequently the State of New York, claimed jurisdiction over the valley of the Connecticut, by virtue of priority of discovery and settlement. It is a well authenticated historical fact that your beautiful river was discovered, and first explored, by the first vessel built in New York, if not the first one built on this continent. (Cheers.) But I will not revive the ancient controversy about territorial limits, however conclusive my arguments might be in favor of those I have the honor to represent. I have no reason to suppose that those who hold the power here, are disposed, under any circumstances, to surrender their position. But let us glance at the changed condition of this region, since my predecessor, Governor Stuyvesant, adjusted at Hartford the territorial disputes between New Netherlands and New England. (Cheers.) Then the hills of this disputed ground were wild and uncultivated; its valleys were shaded with deep forests, its torrents dashed wildly and uselessly from the mountain sides. Now its hills are occupied by a numerous and refined population, its valleys rejoice in the beauty bestowed by cultivation and rural adornments, its river is the patient servant of commerce, and its torrents, subdued to man's service, drive the complicated machinery invented by his ingenuity, and are taught to leap forth in the morning from their mountain homes to drive the laboring wheel, and to glide in at evening to their rest. (Long applause.) The very strongholds of nature have been invaded—the iron track of the railroad winds its way through the recesses of your hills, and the swift locomotive shrieks its defiance to rocky barriers or mountain obstructions. So great are the changes wrought by the industry and enterprise of your people, that if the ancient title of New York to this region was to be conceded, we should not be able to identify it with what we formerly claimed. (Cheers.)

I have no skill with regard to the qualities of the noble animal which is the object of this exhibition, but I recognise its importance, to the agriculture of our country, and that renders its improvement a matter of deep concern to our country. The necessity for advancing the agricultural interests in the United States, has been the frequent theme of agricultural orators and
writers. If I mistake not the portents of the times, the truths
they have uttered will soon be felt, for reasons more cogent than
those at the command of the advocates of agricultural interests.
The present is a period of speculative excitements, and many
have embarked in schemes, and have been borne aloft by bub-
bles, which glitter in the sunshine, and are gorgeous with prism-
atic hues, who, in view of the gathering clouds, begin to feel
solicitous for a safe return to the earth they lately spurned. Fort-
tunes acquired rapidly, and without labor, may perchance as
rapidly and easily disappear. It remains to be seen if the mod-
ern financier will be more successful in creating wealth by mys-
terious expansion of the currency, or by the creation of scrip
and stocks, than the ancient alchemist was in his attempts to
transmute the baser metals into gold. Many who have attempt-
ed to evade the edict that man shall earn his bread by the sweat
of his brow, may learn that he has lost the health and content-
ment resulting from honest toil, only to have cold dross wrung
from him by an anxious and perplexed mind. (Cheers.)

Whoever glances over our broad land, and marks the variety
and value of its natural productions, must have felt the para-
mount importance of agriculture. We possess every variety of
climate, and enjoy every advantage resulting from natural posi-
tion. But the history of the world shows that natural advan-
tages have failed to secure wealth, prosperity or power to any peo-
ple, unless their intelligence, enterprise and skill, have made
these advantages available for useful purposes. The skies of
Italy are as bright, her air as genial, and her soil as fertile as
when Rome was mistress of the world. (Cheers.) The condi-
tion of the North and South American Continents show in a
strong light the same truth. Both continents enjoy the same
varieties of climate and productions, the same advantages of great
navigable rivers, and yet, how different are the conditions of
their inhabitants! We are also taught by the history of all na-
tions that no art is carried to a high degree of excellence, unless
it is held in high estimation by the public mind. The State of
Massachusetts affords abundant evidences of the correctness of
the proposition. Her merchants, her manufacturers, and her
seamen are skilful and prosperous, because their skill and success are admired and appreciated. (Cheers.) You will find everywhere within the limits of this State, that their particular branches of industry are most prosperous when carried on in communities who appreciate excellence in their management. Beyond all other circumstances do you owe the prosperity of your State to your wise and just public appreciation of industry, intelligence and enterprise. Man requires the sympathy of those around him, to give him vigor, confidence and power, in the conduct of his affairs. For this reason, the manufacturer expends large sums of money to create upon your beautiful river, a few miles from this spot, an artificial water power, while in many sections of our country the stream or the broken cataract are wasting their unemployed strength. (Applause.)

Those who originated this successful exhibition have attempted to promote one branch of agricultural economy by drawing forth this manifestation of public interest in its behalf. They have rendered the public a great service by their efforts; and as an American citizen, I thank them for the wise and patriotic effort. The eminent men of our land, from the days of George Washington to those of Daniel Webster, have evinced deep solicitude for the farming interests. It was wisely and wittily said by one of your citizens, on an occasion like the present, that "although every farmer was not a President, yet every President was a farmer." (Cheers.) Those distinguished men engaged in the cultivation of the soil, not only because they found in the occupation mental pleasures and bodily health, but also because they were impressed with the importance of agriculture to our country, and the propriety of creating a just sense of its value and dignity. Without undervaluing other industrial employments, they felt the prosperity of all classes was based upon the productions of the soil. That in periods of commercial distress, or manufacturing depression, when financial revolution overwhelmed the merchant, or overpowering competition bore down the mechanic or manufacturer, like fabled Antaeus, we had only to touch the earth again, and new vigor and strength would be imparted to all branches of industry. (Great applause.)
I am happy to have an opportunity of visiting the State of Massachusetts on an occasion like this. The histories of Massachusetts and New York are honorable to them. In the one, the first blood of the Revolutionary struggle was shed; in the other, the first surrender of British arms was made to American daring and courage. (Cheers.) I give you,

The State of Massachusetts.—Her just appreciation of the honorable pursuits of industry, and the respect she pays to those who, by their intelligence, enterprise and energy, contribute to her prosperity, have elevated her to a high position among the States of our Union.

Governor Seymour resumed his seat amidst loud and prolonged applause.

Mr. Wilder, the President, said:—I regret to state, that His Excellency the Governor of Massachusetts, who was with us yesterday, has been obliged to leave the town; but Massachusetts has many honored sons, and we have one with us, who, though a minute man on the occasion, has never failed to serve the State with honor, nor to do great credit to himself. I introduce to you our late Minister to the Court of St. James, Hon. Abbott Lawrence. Three cheers were called for and given, with great spirit.

ABBOTT LAWRENCE’S SPEECH.

Mr. Lawrence spoke as follows:—Mr. President, Ladies and Gentlemen,—It is quite true, that on this occasion, I am literally a "minute man;" and I regret, personally, more than I can express, the absence of him who should reply to this toast, on the present occasion. I cannot, however, as a Massachusetts man, decline to thank the Governor of New York for the toast which he has just given. I cannot, I say, as a descendant of the Pilgrims, refuse to thank you, however humbly it may be, and to thank all present here from other States, for the kind feeling which has just been exhibited for the State I am called upon to represent.

Ladies and Gentlemen, — I hardly know where to commence, and I am sure I shall not know where to end, for my delight has been greater than I can express. Every thing that I have seen here to-day has far exceeded—much as my expectations
had been raised — anything that I had supposed would occur here on this first exhibition of horses. I take it for granted that all who have appeared here on this occasion, came first because they had a general interest in agriculture, and particularly because they had a special love for horses. Mr. President, I look upon the horse as the great civilizer of man. We talk in these modern times of the steam engine and the telegraph as the great civilizers of man. But the horse has been a greater civilizer than either the steam engine or the electric telegraph. Our battles have been won by the horse. Ancient as that animal is, we owe more to the horse for civilization, I think, than all other animals that are within the dominion of man. I am not here to trace the history of the horse, which is beyond history itself. But I wish to bring to your minds one fact — that which I have already mentioned — that the horse has fought our battles and won our victories. In our Indian battles, we subdued the enemy through the instrumentality of the horse. And I rejoiced when I received a note from a Committee of gentlemen in this town, informing me that there was to be a real horse exhibition here, and nothing but horses. (Applause.) It is due to the horse, but it is due to ourselves, also, that we should sustain, cultivate, and care for the horse, which has done so much and is yet doing so much for man. (Cheers.)

Mr. President,—Before I say anything further upon this subject, I beg to thank, in behalf of the Commonwealth of Massachusetts, the citizens of Springfield for having made all the arrangements so admirably, and for having called together such an immense body of people, from different parts of the Union, to celebrate this occasion. I should do injustice to the people of Massachusetts if I were not to express to you the heartfelt acknowledgments, as far as I know, of every man, woman and child in the Commonwealth. I have never, in my experience, known any question before the people of Massachusetts, that met with such universal approbation. When it was announced that an exhibition of horses would be held in Springfield, I never heard one individual of any religious denomination or political opinion, or any person whatever, make a comment or remark
against its being held; but, on the other hand, it has received the universal approbation of the community. (Applause.) All the appointments in regard to this exhibition appear to me to be perfect, for we have seen no confusion, no mistakes, but everything just as we would have it.

Mr. President,—I cannot but hope that the success which has attended this exhibition, will place the Institution, which, I trust, is now formed, upon a permanent basis. I trust we shall have such an exhibition every year; and if I had my way, I would always have it in Springfield.—(Great cheering.) But, gentlemen, it does not become me to say where a great national exhibition shall be held; but everything has been so well done here, that it cannot, in my opinion, be improved. I therefore tender to the citizens of Springfield, in behalf of the Commonwealth of Massachusetts, its fervent acknowledgments and thanks for the great labor and pains that have been spent upon this most successful exhibition. (Loud cheers.)

Gentlemen, I did not rise to make a speech. I had no notice, more than a few moments before we sat down at the table, that I should be called upon to speak, and if I had been notified, I should have been slow to attempt it, after the eloquent remarks that have been made by His Excellency, (Gov. Seymour.) We have a large number of gentlemen present from other States of the Union, whom I rejoice to see around me; and more particularly am I gratified to see present, several Governors and Ex-Governors from different States—for I am not a Governor, you know, I only take the place of a Governor. (Laughter and applause.) I shall not take up your time, when we have men upon the platform who came from the land of cavaliers and chivalry,—I shall not take up your time further on this occasion, except to bring out these men, who have delighted not only their own State, but the whole Union.

I will close what I have to say by thanking you again, not only on the part of Massachusetts, but on the part of the whole nation, for this exhibition. I will give you as a sentiment,

The State of Virginia—The land of great men and of patriots. (Loud cheers.)
The President then said:

I have the pleasure to present to you a son of Virginia, distinguished for his public services, and renowned for the deep interest he takes in the cultivation of the soil and kindred pursuits — Hon. John M. Botts.

SPEECH OF MR. BOTTS.

Ladies and Gentlemen,—It might very well abash a much older speaker than myself to be called upon to speak under the circumstances in which I stand, especially in the presence of one of the Governors of Virginia, who is not only a much older, but a much better and more practical public speaker than myself;—I say I might well stand abashed before this company, to be called upon to address such an assemblage, and especially upon an occasion so noble in its character. Although, sir, we are a horse-loving people in Virginia, we have had no such exhibition as this, nor have we attempted it. I am not a horse-talking man, Sir: I am rather a horse-running man. (Laughter.) I came here, Mr. President, upon the invitation of your Committee, expecting to witness an exhibition such as has never been presented to me before. But, Sir, I have been surprised at the exhibition I have seen. I have witnessed not only a display of which you yourselves may well be proud, as citizens of Massachusetts, but of which I, as a citizen of the United States, am proud. (Loud cheers.) You have had an exhibition of horses that would have done credit to any Commonwealth in the Union. But you have had much more than that. You have had an exhibition of men and women that would have been a credit to any nation of the world. (Loud applause.) I am not surprised at your horses, Sir, (laughter,) I expected to see fine horses, and I have not been disappointed nor surprised. I have not been a traveller in other parts of the world, but I have travelled over a large part of the United States, and I have no hesitation in saying, that I have never been in any State of the Union, where, in my judgment, such a vast concourse of people would have conducted themselves with such marked propriety and decorum. (Great cheering.) During the twenty-four hours I have been here, in the midst of some twelve or twenty thousand people, I have not
seen a single riotous, turbulent or noisy man. (Applause.) Will you pardon me, Sir, if I say, that while I give due credit to the men for the extreme decorum which they have manifested, I yet attribute a very large share of it to those whose presence never fails to shed a holy, a heavenly influence on those who appear before them. (Enthusiastic cheers.)

But, Mr. President, you will pardon me again, I trust, when I say that I think you are somewhat "whipping the devil round a stump." I do not mean, Sir, to bring you into any conflict or difficulty with your ministers—but I do not think, Sir, the reproach comes well from your lips for our Virginia passion for racing, when you practice it as I have seen it practiced to-day. (Laughter.) Sir, although you are from the land of the Pilgrims, the land of the Puritans, devoted to their altars and their gods, and I from the land of the cavaliers, devoted not only to our altars and our gods, but to the sports of the chase and the turf—notwithstanding we come from these different classes, I find that that is that, and is is is, and that is that is. (Loud laughter.) We are all descendants of Adam, and you do precisely the same thing, in a different form, that you condemn in us. What have we seen, Sir? I will say it because it is true. (Laughter.) We have seen conscientious and respectable gentlemen offer a premium for the best looking and fastest trotting horse that could be produced. What could you have seen at my home in Virginia? You might have seen an association of equally respectable gentlemen offer a premium for the best looking and fastest running horse. (Laughter and applause.) And I do not know, Sir, that any where in Holy Writ, the one is condemned while the other is approved. (Cheers.) I could not help thinking, yesterday, when I saw the ladies waving their handkerchiefs, and men clapping their hands as the trotting horses passed by, if we could only have put from two to four of our best Virginia racehorses on the track, what a scene we should have witnessed! You would have heard the welkin ring, until it shook and startled the ancient original populace whose bones are slumbering in the valley. (Applause.)

But, Mr. President, Virginia and Massachusetts have not
heretofore known each other as competitors in horse-racing. I have not known Massachusetts as eminent in the production of fine stock; I have known her in a much nobler and higher character. We of Virginia are proud, Sir, when we reflect upon Massachusetts and know that she is so inseparably connected with us in the past, that she cannot be separated from us in the future. Sir, we know that while in Virginia the first impulse was given to the ball of the Revolution, it was in Massachusetts that the first sword was drawn and the first blood was spilt. And we also know, Sir, that in Virginia, upon the plains of Yorktown, was the last spot where blood was drawn, and the sword was sheathed; but not until the British lion had crouched beneath the talons of the American eagle. (Applause.) This association we are proud of. We are proud when we turn our eyes to Massachusetts and know from her past history that she will be found struggling shoulder to shoulder with Virginia in protecting that glorious Union which they alike contributed to establish. I know the value of Massachusetts' history; and permit me to tell you, Sir, that Virginia has an abiding confidence in the wisdom of Massachusetts' statesmen, that they will always be found in their proper place, when the value of the Union or the strength of the Constitution of the United States is put to the test. (Applause.)

But, Mr. President, I am overleaping the limits I had prescribed to myself when I rose, (Cries of "Go on, go on," and I will conclude by offering you a sentiment. I will give you

*The State of Massachusetts*; Let them say what they may; I state that the mass of her people, will never choose to set themselves up against the Union of the States, or the Constitution and Laws of their country.

Mr. Wilder then arose again:

*The President.*—I have to state, ladies and gentlemen, that we have another distinguished son of Virginia present with us to-day — one who has received the highest honors of his native State. I present to you Ex-Governor Floyd, of Virginia.
EX-GOVERNOR FLOYD, OF VIRGINIA.

Gov. Floyd, on rising, was greeted with hearty cheers, and responded as follows:

I accept the courtesy which has been offered to me, and I return my acknowledgments for the honor conferred upon me, in behalf of the Commonwealth to which I belong;—it is hers, and for her, I tender to you, Sir, and to this audience, my thanks. But for myself, as an individual, I may be allowed to say, that I admire that which has passed before my eyes. I admire, and I congratulate you, fellow citizens, upon the exhibition which has been made here to-day. I admire the spirit which has brought you together. I admire the sentiment which it is manifest is in the heart of this people. You have come here not to offer up your tribute of praise and honor and admiration, to the victor who comes fresh from the battle-field, clothed with the laurels of victory. You come not here to celebrate an occasion where the tears of the widow are mingled with the crystal cup that you drink, or where the sighs and sorrows of the orphan wail up with the acclamations that meet the ear. You come here to celebrate an institution which is intended to make "two blades of grass grow where one grew before." (Cheers.) You come here to witness the triumph of an institution which gives to the nation strength and power. You come here to celebrate the triumph of a perfect idea. You come here to witness the consummation of a great institution. You come here to do what Massachusetts has often done before, to set an example that is worthy to be pursued by the American people. You have often set an example which the men of the North and the South, and the East and the West, were proud to follow. I venture to say, that there is not an example in modern times, set by Massachusetts, that is more worthy to be followed than that which you have set to-day. It is not an experiment, but is a thing perfect in itself. As the goddess of heathen mythology sprang from the brain of Jove, so has sprung forth this institution, which is to carry its influence through the remotest parts of this great republic. (Loud cheers.)

For myself, Mr. President, I cannot say how much I admire
the spectacle which has been presented to me upon this occasion. But I protest against the "flourish of trumpets" with which I was introduced to this assembly. I do not deserve it, and my friend, Mr. Botts, knows that I do not, (laughter); and I will give to you the most indubitable proof that I do not, before I conclude. (Renewed laughter, and cries of "No, No.")

But I hold sentiments which I feel at liberty to express—sentiments of admiration for what I have seen here to-day. I admire the object which stimulated the enterprise—it was a noble one. It has been said here to-day, more eloquently than I can say it, that the American people are intimately connected with the horse. It is true. Many of our triumphs are owing to the assistance which we have received from that noble animal; and it is therefore meet and proper that Massachusetts should have set the example to the American people of bringing forward in their most practical and most deserved capacity, the attributes of that animal. (Applause.)

Perhaps we may out-run you, of Massachusetts; but people do not always run well. (Laughter). You have trotters here; and, after all that is said and done, I believe that is the best gait for success. (Cheers.) We will emulate your example, and in a few short years—I hope in a shorter time than that—if you will come down to Virginia, we will exhibit fine horses and good trotters, too.

I admire what I have seen here. It is a glorious spectacle. It is full of past associations, and it is full of hopes for the future. Fellow citizens, when I saw that mighty concourse spread out before me to-day, I was led to contrast that and a similar scene, when that bright sun that shone upon us shone upon another republic, not less renowned, but, I trust in God, to be less renowned, than ours—the exhibition at Rome, where the populace were collected together for the purpose of witnessing—not what calls us together to-day—not that which ennobles a nation—not that which stimulates to practical and glorious emulation—but when they were assembled to be the witnesses of the convulsive writhings of some trembling human being who was thrown
down to be devoured by wild beasts, or to witness—more dreadful still—the agonies of the dying gladiator—

"Butchered to make a Roman holiday."

It was not such scenes that we are assembled to witness, but a higher, nobler, and more glorious spectacle, illustrating the difference between heathenism and the blessed religion in which we all profess to believe. (Cheers.) The contrast is striking. Your numbers were not less. The excitement was not less great, and, above all, the objects were ten thousand times more elevated in your case than in theirs.

I repeat, that I admire the spectacle which I witnessed. I confess that to me it was altogether a new one; and, if I am a stranger north of Mason and Dixon’s line, I feel to-day that it is my misfortune. (Applause.) But, Sir, stranger as I was, I did feel, and I do feel, that I had a participation in the scene which passed before me. I felt that you were my brethren. I felt that we were members of one family; and I was proud—aye, I measure my words—I was proud of that concourse of stalwart and sturdy men, the representatives of the “universal Yankee nation.” (Applause and laughter.) I was proud of the people before me—proud of their appearance, proud of their stature, and proud of their demeanor; but, above all, was I proud of the festoon of beauty, which, upon the amphitheatre before me decorated the scene, and rose upon the horizon like a galaxy of stars in the firmament of a bright summer sky. (Loud applause.)

I could not but feel that associations of this kind did more to harmonize the feelings of the American people, did more to perpetuate the institutions under which we live, than all the resolutions that could be written, than all the laws of Congress that could be passed, than all the sermons that could be preached. (Loud cheers.) This is a great and glorious alembic. Here we mingle together in a common object. The asperities of party contest are soothed; the exasperation of party feeling is destroyed; the invective which arises from sectional feeling vanishes forever and forever; and we come up to a pure sentiment of
philanthropy and natural affection. Such is the spectacle presented to us here to-day. (Cheers.)

But, gentlemen, my voice has given out, and I feel that I ought to have given out before my voice. (Laughter.) I will, in conclusion, offer this sentiment:

Massachusetts Men and Massachusetts Horses — Upon whatever theatre they exhibit, or upon whatever course they enter, they are destined to win, and deserve to win, the admiration of the American people.

(Cheers.)

The President.—I am happy, my friends, to announce, that we have with us the Vice-President of the United States Agricultural Society, from the State of Delaware, who has recently travelled in England, for the purpose of making investigations in relation to horses, as well as to the general subject of agriculture. I call upon Mr. Chauncey P. Holcomb.

MR. HOLCOMB, OF DELAWARE.

Mr. Holcomb, of Delaware, on rising, was heartily cheered. He said they had sometimes heard of calling "spirits from the vasty deep," but they did not always come when called for; and perhaps it would be better for him to decline responding to the call they had made, after the eloquent words to which they had listened. He had heard the remarks of the various gentlemen with great interest and pleasure, and especially those of our late Minister to England, (Mr. Lawrence,) when he thanked the citizens of Springfield in the name of Massachusetts, and in the name of the Union, for this great exhibition. He had no doubt that that was the honest expression of his feelings. It was an occasion of congratulation to the country at large. But, perhaps, as full praise has been given to the citizens of Springfield, and to the value of the stock exhibited there, they would pardon him while, as a practical farmer, he made a few practical suggestions.

He had gone, as the President observed, the past summer, to England, and a part of his object in going there was to select a horse, and he travelled a great ways, in different parts of the king-
dom, for the purpose of ascertaining their condition. He had ample facilities for his object, having an introduction from Mr. Tattersall, which enabled him to visit several of the most celebrated studs there. The result was, that he came away without purchasing a horse at all. He wished to tell his brother farmers what the course of breeding was in England, and to show the result upon the stock, that no American farmer need go further in the same direction. They were aware that when the English breeders introduced the blood of the Barb, the Turk and the Arab, no better horses were to be found in the world. They would then run four miles and repeat, carrying 140 pounds. Now instead of running four miles and repeating, they only ran two or three, and did not repeat at all. It was a single dash of two, two and a half, and, at the Derby, of three miles, and that was all. He had told eminent breeders there, that the horses in this country ran four miles and repeated. They did not doubt the fact. They said they had formerly such horses, but it was not so now. In corroboration of his statements, Mr. H. mentioned that, in a conversation he recently had with his friend from Virginia, (Mr. Botts,) he assured him that some horses of the Boston blood ran, the other day, at Richmond, four miles in 7.46, 7.46\frac{1}{4} and 7.49. They would see in what remarkable time the last heat was run—about three seconds longer than the first. They had not got any horses like these in England; they would be very proud of them if they had.

Why was this degeneracy? In the first place, he was very much surprised on visiting England, to find that horse-racing, if it was not the business of the nation, was a very great amusement. In every city, town and village, they had betting-houses, where all the members of the community, the serving-maid as well as the nobleman, entered their bets, through the whole year, to be decided when the races came off. So great had this evil become, that a bill was passed, at the last session of Parliament, designed to put these betting-houses down. Now, the result of this was, that every attention was paid to getting heels. He had stood by the side of yearling colts, fifteen hands high, and he asked the trainer, Mr. John Day, how it was possible to make
up those colts in that way. Mr. Day told him that they were entered to run at two years old, three years old, and they were entered shortly after they were foaled, to run at a certain time. The dam was kept as high as possible, and in the paddock there was a little box, into which the colt could run, where oat meal was placed, and oats were always before him. They were stuffed with all the oats they could be induced to eat. The consequence was, that they made some muscle, but it was quite impossible that they should have much bone. They run at two, three, and four years old; but at all the races which he attended, he saw but one or two entered to run even at five years old, for by that time they were broken down.

He wished to say here,—since they had come together to speak out freely their opinions—what he thought. He believed that they needed to put two or three inches upon the height of their horses; and those two or three inches of height the breeders must give. They could do it. They would give them five years—ten, if they wished—but they must put their horses up a few inches higher. Gentlemen might say that they were tall enough for some purposes; but what he wished to do was to supply the luxuries of the cities. The horse, with the citizen, was an article of luxury. They would pay almost any price, if the breeders would only get them up to the right height. "Now, gentlemen," said Mr. H., "get your Morgans and your Black Hawks up these two or three inches!" (Applause.)

There were two ways of doing this. One was to keep the dam in good condition; let her do no work. Then let the colt be pressed with oats, say until he was a year old. Up to that point, he conceived that there was no danger; but there they must stop. Another was, by breeding larger horses upon this stock. There must be risk there, but he would try the plan. He would try the pressing system, for every farmer knew that if he gave a calf a little corn, in addition to keeping the cow in good condition, the animal would grow better and faster than under other circumstances.

Mr. H. said he understood the value of Southern blood, the thorough bred race-horse; he believed there were no better
bred horses in the world, and none faster. He would not have them undervalue this breed; it was such blood as they had not got in England.

He (Mr. H.) was a grower of wheat. He ploughed the ground with his horses; he sowed his wheat fields with his horses; he drilled in his wheat with his horses; he reaped and thrashed out his wheat with his horses. They were not only an article of necessity to the farmer, but they were everywhere an article of luxury. What they wanted, in the rural districts, was to improve the breed of their horses, that their sons and their daughters might ride at pleasure, as well as to make the animal more serviceable in the field. In conclusion, Mr. Holcomb said—I shall go away from this meeting very grateful for the exhibition. I shall certainly return; and to that or to some other occasion, we must postpone the erection of an equestrian statue to George M. Atwater; (loud applause,) and to a much later period—to a day, I trust, that the youngest in this assembly will scarcely see,—the erection of a monument to the memory of the man who was a friend of horticulture and agriculture—the friend of rural life, in all its relations, Hon. Marshall P. Wilder. (Great cheering.) I will conclude with the expression of a wish—a good wish. It is prompted by a recent visit to the grave of Robert Burns. I went down to Ayrshire, where the noble poet labored, like myself, in the harvest field and at the common drudgery of life, boasting that no man could beat him at the plough, the scythe, and the reap-hook, and so he put absolute want at defiance. He apostrophies the farmer in this way—let me quote the words of the poet, a brother farmer:

"O! Scotia! my dear, my native soil,
For whom to heaven my warmest wish is sent,
Long may thy hardy sons of rustic toil
Be blest with health, and peace, and sweet content,
And, Oh! may Heaven their precious lives defend
From luxury’s contagion weak and vile;
Then how’er crowns and coronets be rent
A virtuous populace will rise the while,
And stand a wall of fire about their much lov’d isle.”
Hon. Abbot Lawrence,—I thank you for according to me the privilege of proposing a sentiment here, which I am sure the whole audience will thank me for claiming, and to which they will respond without stint. Believing, as I do, that one individual has been a great public benefactor, and that his name should be recorded and transmitted to posterity, I have asked the privilege of giving a toast, and that toast is to the individual who has originated and promulgated the idea of this great National Horse Convention. Without occupying your time in making any extended remarks, I beg to offer to you—

Health happiness and prosperity to George M. Atwater. (Loud applause, followed by three hearty cheers.)

Mr. Atwater then mounted the stand amid enthusiastic plaudits, and said,—

Speech of George M. Atwater.

Mr. President,—Cordial and enthusiastic have been the greetings of the tens of thousands of voices which have been heard on these grounds, since the first opening hour of this exhibition; and I trust and believe that the hearty response with which our efforts have been hailed, is but the expression of a sentiment which will live beyond the greetings of to-day, and find utterance on other plains and in exhibitions of lasting interest and utility. Allow me to say a word, sir, with reference to the desirableness and expediency of following up the precedent which has been established for the annual and sole exhibition of horses.

I feel, indeed, that argument on this point is now no longer necessary. The universal support and encouragement which have been extended to this enterprise, together with the unanimous approval of the press, are a guaranty that, henceforth, to the Horse will be accorded a position in some good degree proportioned to his excellences and value. It is no apology for those to whom properly belongs the duty of breeding and rearing this animal for domestic uses, that the disposition of training him for the course, which has so long prevailed in England and in certain sections of our own country, has already resulted in devel-
oping many of his extraordinary powers. There are qualities constitutently belonging to him (I am satisfied from my own experience in his use) which remain to be developed.

You are aware, Mr. President, of the interest with which the horse was regarded by the people of Greece and Rome, in the periods of their highest refinement and civilization; however modern and valueless the race of “fast men,” we have abundant evidence that fast horses were the glory of the ancients. In referring to the records of their history, we also notice that there were three essentials which constituted eligibility to the honors of State: that the person should forsake his benedictine life, that he should build for himself a house, and that he should sustain the relation of parent; I think, sir, that they might, with equal propriety, have insisted, also, that the applicant for distinction should rear for himself and his successors at least one thoroughbred horse.

The love of the “Arabs” for their horses, and their humanity to them, are well known. So highly have they esteemed them that their genealogy is traceable back for two thousand years.—Those of their purest stock are reverentially denominated “nobles.” One of this class, so renowned for strength and beauty, was imported into England by the talented divine, Bishop Heber, and so cordial was he in his esteem of the animal that the “Arab” became his familiar pet.

With us the subject of raising thorough-breds has been so lightly esteemed, that I hesitate to refer to the number of this class of horses, which the catalogue of our exhibition presents. As an instance of the value of “thorough-breds,” I will allude to the profits resulting from the ownership of that famous horse “Eclipse.” His name, sir, which you know was given him “because he distanced all competitors, or, in other words, they had no place. Of his speed, no correct estimate can be formed, as he never met with an opponent sufficiently fleet to put it to the test.” “Eclipse” produced three hundred and thirty winners, netting to his owners the sum total of over one million of dollars. I have the opinion of the Hon. Mr. Holcomb, a distinguished member, Mr. President, of your “honorable
body"—that the impetus which this exhibition will undoubtedly give to the breeding of superior stocks of horses may result, in the limited period of five or ten years, in an increased profit to the farmer, of an amount equal to the present entire revenue of our government.

The horse, sir, is a type of the qualities which do honor to our efforts to exalt the standard of his excellence, not alone in beauty, but for adaption to the imperative wants of man. The requisition which we make upon him cannot be answered by any other animal in the wide creation.

Mr. President, I will not quote the distinguished and accomplished Lord Herbert, of England, who is an impartial admirer of this noble race, when he says that "a good rider, on a good horse, is as much above himself, and others, as this world can make him," but I think that the sentiment thus expressed and the authorities given, will exonerate those who are in earnest in regard to this subject, from the imputation of being elevated upon the stilts of exaggerated zeal.

Mr. Wilder, the President—Ladies and gentlemen, I beg leave to introduce to you Ex-Governor Colby of New Hampshire—the land of granite and ice, of stout men, with hard hands and noble hearts. (Cheers.)

Ex-Governor Colby, (the only whig Governor New Hampshire ever had!) responded as follows:

Mr. President, ladies and gentlemen,—If any man deserves pity, I deserve it, and need it now. (Laughter.) My position reminds me of that of a ministerial scholar whom I once knew, who said that he "commenced at Revelations and left off at Genesis" (Cheers.) The great speakers of the whole nation have spoken, and have left it for little New Hampshire to come afterwards. But I always answer to my name, and answer to the State where I was born, and have always lived, and where I shall probably die. I have no speech to make. I have no time to make one, and if I had ever so much time, I could not make one fit to be heard. (Laughter.) To make a sober speech
would not be acceptable here. To make a very sensible speech—I should fail in the attempt. (Laughter.) To make a political speech would not answer at all, for the stock in the market is so low that I should not know what to take hold of. (Vociferous laughter and cheers.) Now, if there is anything I can talk about for two minutes, I should like to talk You remind me of one old minister who was called upon to deliver a Fourth of July oration. It was soon after the war of 1814, to which he was a little opposed, and he said to those who invited him, "Gentlemen, if you tap the cask, you must take the liquor as it comes." (Great merriment.)

It seems to me that the subject of horses may not be very deeply interesting to the ladies, in every point of consideration; but this I will say, I think they have always been, and I presume always will be, in favor of good matches. (Renewed merriment.)

Gentlemen, my friend from Virginia has spoken well—he has spoken well of us, as New England men. I come from the State of New Hampshire. We come in a little behind in the matter of horses; but I would have every other State understand that what we cannot do in actual showing, we will make up in bragging. (Great laughter.) If we fail on horses we will bring you up all standing on men. It is a given point, throughout the world, that we have raised and sent out the greatest men upon earth. (Cheers.) I want it distinctly understood, Mr. President, (though I don't know whether you believe it or not, if I tell you,) that we have men at home who will stand up and lick salt off the heads of the tallest whom we have sent out. (Loud laughter.)

Mr. Wilder, the President—For one, ladies and gentlemen, I "acknowledge the corn." (Renewed laughter.)

Gov. Colby,—I am reminded to make one exception; I except Daniel Webster. (Cheers.) I am glad that my friend, the President, acknowledges the fact. Now, gentlemen, I want to say, that what we lack in actual showing, I have made up in bragging. (Cheers and laughter.)
Gov. Colby here sat down, but immediately rose and said—I forgot one thing. I should not have asked for your pity if they had not called me Governor Colby—if they had called me Colby, and let it pass at that. But it is usually thought something more will come from a man who has been a Governor, than from a simple citizen. But I want to express this fact, we do not take our largest men for public men. (Great laughter.) Now, if you will believe it, sir, I got the “ex” on my name in one short year. (Laughter.) I served the State one short year, and I came off the track in good health, a constitution as sound as a boy’s, and able to go on again; but the people thought it wasn’t best. (Great merriment.)

The President— I give you now, ladies and gentlemen—
The Press—The best seed-sower ever invented for the use of man. May it never scatter the seed of the bitter aloe, or the apple of discord. (Applause.)

Mr. Bigelow of the N. Y. Evening Post, responded to this toast in a train of eloquent and appropriate remarks, and closed by giving “The hospitality of Springfield.”

Mr. Wilder, the President, then gave “The Agricultural Press,” and called upon Ezekiel Holmes, of Augusta, Me., editor of the Maine Farmer, for a response, which was given in a few brief remarks upon the history of the agricultural press.

Mr. Wilder, the President—We have many distinguished gentlemen present, to whose voice we should be glad to listen, but the hour is so late, that we shall be deprived of this gratification. But we cannot proceed further in this festival, without invoking the “benefit of the clergy” (laughter); and I will therefore propose the following toast, for I am confident that it will call forth, if not a sermon, one of the best speeches that has been made upon this occasion. I give you—
The Clergy—May the seed they sow spring up without tares; and when the harvest is past, and the summer ended, may they be garnered with the fruits of righteousness.

I call upon the Rev. Frederick D. Huntington, of Boston, to respond.
REV. MR. HUNTINGTON'S SPEECH.

It occurs to me in acknowledging your call, Mr. President, as just possible, that some persons here may be asking what precise relation subsists between my profession and fast horses. I beg such persons to remember, that, with our present ecclesiastical tendencies, some of us will presently need the very fastest of your thorough-breds to take us out of one parish into another! Some one has suggested that, in these days of short ministries, the clergy would do well to inhabit some of those movable daguerreotype establishments occasionally seen in our country towns, so that they might be trundled on, conveniently — parlor, kitchen and all,—from town to town. But, as things go on, sir, I imagine we should soon find these to be decidedly "slow coaches." And when my turn comes to migrate, I confess I would much rather, for the poetry of the thing at least, find myself on the back of one of your Black Hawks or Morgans,—your "Bob Logies," or "Lady Digby's." Perhaps the daguerreotype locomotive would better accommodate our good wives and the children, but then, for them, we might bring out some of the old-fashioned pillions of our grandmothers, which hang, embroidered with cob-webs, in so many of our old New England stables.

A great many fine things have been said about the horse, to-day sir; and I am anxious to say as fine things as any body, for I believe I like him as well as any of those who praised him. One of the speakers has declared that America owes a great deal to the horse. But has it ever occurred to you, Mr. President, that all of us, as members of the Anglo Saxon race, are descendants of horses? The two brothers that conducted the first expedition from the forests of Germany to Great Britain, as allies of the Brittons against the Romans, and afterwards coming to be, Anglo Saxon fashion, masters and owners of the soil, — were Horsa and Hengist,—both names, in different dialects, signifying "a horse." Now, if "the kings are the fathers of the people," and we are the "people" descended from that family, then I suppose the case is made out, and our pedigree is proved! It needs but a feeble imagination to trace the analogy between the
spirited traits of the animal they chose out of all the orders of living things to give a title to their heroes, and those qualities of bravery, endurance and mastery, which have always led the peculiar ambition of our valiant and irresistible blood.

Indeed, sir, it is evident enough, and you have made it more evident by the delightful display you have spread before us, that the horse is not to be pushed aside,—in our climate and our branch of the human stock,—out of the path of a progressive civilization. You may invent railways and telegraphs, but you cannot crowd him into a corner. He stands, a soldier, a philosopher, a reformer; and, if that will not disgrace him in the eyes of our friend from New Hampshire—a politician, and perhaps a bit of a preacher into the bargain. What a striking comment is this week's exhibition, right here across the junction and four right angles of two great iron ducts of travel and transportation, on the croaking predictions of those lugubrious prophets who, when the Western Railroad was contemplated, foretold that horses must go out of fashion, and perhaps have to be shot as a superfluity! This is only one illustration of that vast and beneficent providential law, by which God binds our various handicrafts and interests together into one harmonious organism, making every legitimate form of productive labor to be helped by every other.

Personally, sir, I confess to a tender liking for any respectable horse. I have one professional reason for liking him; he is proverbially, you know, a good listener. It has been said by phrenologists, that the horse has a small brain. I am no phrenologist; but I know that whatever the dimensions of that organ may be, he has something that is a remarkably good substitute for a brain. You have seen his intellectual sensibility. Look at that noble Arabian stallion taken captive in a fray in the desert and transported to England by Sir John McNeil. When he fell sick, in that harsher northern climate, and they wanted to revive the drooping spirits in his shrinking frame, they called for instruments of music, to be played at his side. The moment the musicians struck their notes, he threw his head into the air, his nostrils were dilated, his eyes flashed, his whole frame was
tremulous with the "fine frenzy," till fearful that in his delicate
and highly wrought organization, such tension would snap the
cords of life by some violent convulsion, the performers invol-
untarily dropped their instruments to the earth!

Sir, whatever may have been said of the inside of the horse's
head, what do you think of the outside? Who has not admired
that wonderful combination of grace and nobleness which has
made it one of the selectest studies of the artist? Look, too, at
the fidelity of his attachments, the magnanimity of his temper,
and the generosity of his disposition,—qualities of the heart which
over-rule the brain! I remember that in a somewhat celebrated
treatise on the horse, written and dedicated to his Majesty
Charles I, by a Duke of the realm, it is said that "a man is
never so manly as when he is on horseback." There is no room
for doubt that there is some very intimate connection between
the exhilarating habit of going mounted and certain noble traits
of character. In tribes or nations, if not in individuals, you al-
ways find it associated with generosity, frankness and courage,—
qualities that our Yankee habits, of sharp calculation, and etern-
al money making, and our wakeful eye to the main chance, render it especially needful for us to cultivate; for the balance
and largeness of our moral manhood. Chivalry itself is only
Gallic for horse-ry. I have sometimes thought that the hospi-
tality, which characterises the community represented here so
ably by the gentlemen from Virginia, may be attributed, as to
other causes, so partly to the influence of the common indulgence
in this noble practice. I am not sure but it is as sovereign a
cure for meanness as for dyspepsia. Some of our seminaries,
with their pale and puny inmates, might safely take it for a max-
im,—more muscle and less metaphysics and arithmetic! I hold
that the education of no young man, or woman, is complete, till
they can sit firmly and gracefully in the saddle. The laws of
health and beauty requires it. And if the feminine riders should
fail of two of the qualifications of good horsemanship laid down
by an old French author,—namely, "the knowing how and
when to correct your horse,"—and "how and when to help
him," their gentle nature would at least keep the third, and they would know "how and when to caress and make much of him." As for the gentlemen,—if any of them undertake to despise this liberal accomplishment,—I for one should be glad to see them subjected to the peculiar penalties that were visited upon that distinguished philosopher, Mr. Winkle, for the same offence.

There is one reflection connected with this splendid show which is painful. It is that, scattered through our community, there are so many instances of wretched, dismal beasts, stalking daily on the verge of starvation. In all our streets, not only in omnibuses and farm-carts, but in chaises and carriages, we see these melancholy victims of bad management. The true rule of economy is to have every thing good of its kind. Coarse breeds and lean specimens are the costliest after all. If there are any modern horses that realize the fable of those belonging to the Thracian tyrant, and eat up men, it is those that devour their owner's substance, because they are ill chosen, ill bred; and ill kept.

One other reflection, and I have done. Would that an influence could go from this convention rebuking all those inhuman and detestable creatures in the form of men, who abuse the horse,—whether by over-straining, or over-driving, by the cruelties of the lash, or exposure to the weather. They are beastlier than the noble brute they torment. Whenever I have seen one of them standing over his victim, with his scourge in his hand, lacerating and torturing the unresenting animal, I have always felt impatient to see the positions of the whip-handle and the whip-lash inverted. I have been tempted to invoke the terrible punishment suggested by the poet, and to desire some power, to

"Put a whip in every honest hand,
To lash the rascal naked through the world.

Mr. President, let us learn from scenes like this to respect one another's callings, remembering that it is only in this way that we can, as Christian men, be builders together of a divine order of society; and remembering, also, that whoever brings to
higher perfection any branch of honorable and useful labor, does something to elevate, refine and perfect the whole.

I give you, Sir, as a sentiment:

**The City of Springfield**—Her heart always young, she has renewed the wisdom of antiquity; for, by her grand and successful experiment at "playing horse," she has opened the modern Olympics, and made herself the Elis of America.

**Mr. Wilder, the President**—I feel it my duty, before leaving the chair,—which I shall soon be called upon to do,—to offer in behalf of the congregated assembly which has met here for the last three days, our grateful acknowledgments to those gentlemen who have come up here with their animals, to grace and honor this exhibition with their presence. Is it your pleasure thus to tender your thanks, and give three hearty cheers for the exhibitors on this occasion? (Loud cries of "Yes," "Yes," followed by three ringing cheers.)

The President then read the following sentiment, which was received with loud cheering:

**The City of Springfield**—The fertility of her soil and the abundance of her productions are only surpassed by the intelligence, hospitality, and virtues of her citizens.

**Mayor Rice.**

**Caleb Rice, Mayor of Springfield,** responded as follows:

On behalf of the citizens of Springfield, allow me, sir, to thank, not only you, but the entire congregation here assembled to witness this exhibition. It will not be expected of me to make a speech; but simply to respond, as a matter of official duty, to the highly complimentary sentiment which has just been expressed. I have only to say, sir, that if the arrangements made by the city of Springfield for this great undertaking have met the approbation of the public, then they are entirely satisfied. They have met what they expected from the public, and are, as I have said, abundantly satisfied.
The President being obliged to leave the Hall, then called upon Ex-Governor Colby, of New Hampshire, to take the chair.

Gov. Colby—I beg to announce the following volunteer toast, by Solon Robinson, of the New York Tribune:—

“The horse that has been entirely overlooked in this exhibition: the horse to which we are many of us indebted for our presence here; the horse whose legs are wheels and whose sinews are iron, whose feed is fire, and whose breath is steam, and whose speed outstrippeth the wind.” (Applause.)

The President pro tem. then called for the reading of the Reports of the Boards of Judges, when the Premiums were awarded as follows:—

PREMIUMS AWARDED

AT THE

FIRST NATIONAL EXHIBITION OF HORSES,

At Springfield, Mass., October, 1853.

FANCY MATCHED HORSES.

1st premium of $100 to D. Sanderson, Somerville, N. J., No. 14.
2d premium of $50 to Doty & Hubbard, Montpelier, Vt., No. 7.
3d premium of $25 to Francis T. Cordis, of Longmeadow, Mass., No. 6.
1st gratuity of $25 to James Reed, of Palmer, Mass., No. 1.
2d gratuity of $20 to Josiah Crosby, of North Andover, Mass., No. 2.
Diploma to J. Wilcox 2d., of Meriden, Ct., No 16.

MATCHED HORSES.

1st premium of $100 to Lewis Gale, of Barre, Vt., No. 30.
2d premium of $50 to L. B. Chapman, of Windsor Locks, Ct., No. 9.
3d premium of $25 to M. H. Griffin, of Middletown, Ct., for his New Jersey bred horses, No. 3.
4th premium of $20 to S. C. Hall, of Manchester, N. H., No. 6.
5th (extra) premium of $20 to T. J. Shepard, of Springfield, Mass., for his Genesee County horses, No. 19.
Diplomas to L. A. Phillips, of Providence, R. I., No. 7; Nathan Bassett, of Chatham Four Corners, N. Y., No. 16; J. H. Tuttle, of Conn., No. 29; H. H. Parsons, of Amherst, Mass., David P. Foot, of Conn., No 14; Genery Twitchell, of Boston, No. 8.
FARM OR DRAUGHT HORSES.

Pairs of Horses.—1st premium of $50 to C. Fonda, of Clifton Park, N. Y., No. 4.
2d premium of $25 to H. J Chapin, of Springfield, No. 1.
3d premium of $20 to E. Trask, of Springfield, No. 2.
Diploma to George W. Goodrich, Pittsfield.

Single Horses.—1st premium of $25 (not awarded.)
2d premium of $20 to E. & E. A. Rice, of West Meriden, Ct., the only entry.

STALLIONS OF SEVEN YEARS, AND OLDER.

1st premium of $200 to "Cassius M. Clay," owned by J. H. Godwin, of N. Y., No. 20.
2d premium of $100 to Morrill horse, owned by F. Morrill, of Danville, Vt., No. 44.
3d premium of $50 to "Bush Messenger," owned by Hiram Reed, of Augusta, Me., No. 5.
4th premium of $25 to "Black Morgan," owned by Francis Twitchell, Jr., of Petersham, Mass.
Gratuity of $25 to O. H. Hinckley, of Hampden, Me., for his horse "Louis Napoleon," lame by accident, and withdrawn from the field.

Gratuities of $10 each were awarded as follows:


STALLIONS OF FOUR TO SEVEN YEARS.

1st premium of $100 to "Paul Clifford," owned by Hunsdon & Wilcox, Vermont, No. 16.
2d premium of $50 to "Flying Morgan," owned by John Chamberlain and Hiram Gibbs, of Mass., No. 22.
3d premium of $25 to "Young Black Hawk," owned by F. B. Halsey, of Austerlitz, N. Y., No. 18.
A gratuity of $15 to "Flying Cloud," owned by Timothy T. Jackson, of Flushing, L. I., No. 17.
A gratuity of $10 to "Canadian Leopard," owned by Ira Griffin, of Mass., No. 5.
A gratuity of $10 to "Raven," owned by Robbins Battell, of Norfolk, Ct., No. 1.
Diplomas to "North Star," owned by O. Richards, Cummington,

**BREEDING MARES.**

1st premium of $100 to Charles W. Sherman, of Vergennes, Vt., No. 17.

2d premium of $50 to I. F. DeWolfe, of Bristol, R. I., No. 18.


4th premium of $20 to Amos Felch, of Limerick, Me. No. 28.

Diplomas were awarded to Otis Learned, of Oxford, Mass., No. 43; Francis Willson, of Hinesburgh, Vt., No. 14; William Beardsley, of Albany, No. 40; Orrin Trow, of Hardwick, Mass., No. 35; Stillman French, of Keene, N. H., No. 15; Henry Alexander, Jr., of Springfield, No. 8; Phillip Bacon, of Simsbury, Ct., No. 32; George M. Atwater, of Springfield, No. 1; Benj. Pease, of Warehouse Point, Ct., No. 2; F. Stiles, Jr., of Clappville, Mass., No. 10.

**BREEDING MARES WITH FOAL BY THEIR SIDE.**

1st premium of $100 to R. S. Denny, of Clappville, Mass., No. 2.

2d premium of $50 to Judson Nichols, of Flushing, N. Y., No. 5.

3d premium of $20 to Robert Pomeroy, of Pittsfield, Mass., No. 9.

Diplomas were awarded to George Swetland, of Springfield, Mass., No. 6; B. W. Hamilton, of West Hartford, Ct., No. 7. Robert Tucker, of Ware, No. 4.

**GELDINGS,—FOUR YEARS AND OVER.**

1st Premium of $100 to Ebenezer Flagg, of Worcester, No. 7.

2d Premium of $50 to A. F. Smith, of New England Village, Mass, No. 86.

3d Premium of $25 to Francis Twitchell, Jr., of Petersham, Mass, No. 24.

4th Premium of $20 to George R. Wesson, of Worcester.


**COLTS.**

*Stallions of three years old.—* 1st Premium of $50 to John R. Briggs, of Cheshire, Mass., No. 1.

2d Premium of $25 to Levi Coe, of Middletown, Ct., No. 8.
3d Premium of $20 to Barnes Davis, of Vernon, N. Y., No. 11.
A discretionary premium to Edson A. Burchard, Shoreham, Vt., No. 5. [Animal very superior, but prevented by kick of another horse after arriving here, from appearing on the ground.]
A diploma was awarded to E. C. Brooks, Lawrence, N. H., No. 9, and to George Bowen, Worcester Mass, No. 3. Also a discretionary premium to E. C. Brooks, if thought best.

For best Filly, the premium of $25 to Edmund Bush of Sheffield, Mass., No. 2.

Stallions of two years old.—1st premium of $25 to Isaac Crispell, of Hurley, N. Y., No. 5.
2d premium of $20 to Mala Cowles, of Belchertown, Mass., No. 2.
A diploma to Solomon West, East Brookfield, Mass., No. 6. Also to George A. Hunn, of Hartford, Ct., for two year old Gelding.
A diploma for best Filly of two years, to John H. Coffing, Great Barrington, Mass., No. 1. The premium for best filly of two years was not awarded, there being only this singly entry.

2d premium of $20 to R. M. Adams, Burlington Vt., No. 3.
Diploma to Nelson Richards, of Panton, Vt., No. 4.

Pairs of Ponies
1st premium of $50 to J. L. Briggs, of Springfield Mass., No. 1.
2d premium of $25 to Warren Daniels, of Bellows Falls, Vt., No. 3.
3d premium of $20 to John Moulton, of Framingham, Mass., No. 13.
Diplomas were awarded to William Jay, Jr., of New York, No. 4, and L. V. H. Crosby, of Springfield, Mass., No. 6.

Single Ponies.
1st premium of $25 to P. T. Kirby, of Half Moon, N. Y., No. 15.
2d premium of $20 to Jamss Bird, of Hartford, Ct., No. 9.
Diplomas were awarded to James Reed, of Palmer, Mass., No. 11.

Thorough-bred Horses.

Stallions—1st and only premium of $100 to "Bob Logic," owned by J. R. Hutchins, of Montreal, Canada, No. 4.
Brood Mares—1st premium of $100 to "Lady Digby," owned by James Turner, of Boston, No. 5.
2d premium of $50, to "Lady Sussex," owned by Dr. J. G. Bunting, Lewis Co, N. Y., No. 7.
3d premium of $25 to "Jenny Lind," owned by A. L. Bingham, of West Cornwall, Vt., No. 6.
The President pro tem. then proposed "three cheers for the first American Olympiad," which were heartily given, and at half-past 5 o'clock, the meeting adjourned; and the exercises of the Agricultural Banquet, and the third day of the Exhibition, were over.

FOURTH AND LAST DAY.

SATURDAY, OCT. 22.

The weather, which had hitherto been propitious, now "lowered upon our" Show. The streets of the city were muddy, the track heavy, and a cold blanket seemed to have been cast over bipeds and quadrupeds. The most important and interesting exercises and exhibitions of the occasion had, however, been pleasantly concluded with the banquet of the previous day, and nine-tenths of the strangers had gone with its setting sun.

A considerable crowd was collected, however, on this morning, by a report that there was to be some spirited trotting on the track. If any such plan was contemplated, the clouds "threw cold water upon it," and it was abandoned.

The premium horses were called to the Judges' stand, at the appointed hour, and received each, a small flag, which they bore off in conscious triumph.

A sale of horses was next in order, but little spirit was shown in the bidding — (cold water was in the ascendant and descendant.)

It is estimated that more than 30,000 strangers visited Springfield during the week. October and autumn as it was, the farmers of the neighborhood reaped a fine harvest during that week. The price of chickens, vegetables, and other edibles was quadrupled; butter and eggs could not, in some cases, be procured at all.

The Rail Road Corporations have received and modestly accepted considerable praise for their accommodations and liberal spirit. We cannot ourselves see in what way it was evidenced.
They, (or some of them) to be sure, transported horses intended for the Show, free of expense. This was well, but it is usual for almost all roads so to do on occasions of the great Agricultural Shows; and they thereby accommodated the exhibitors — numbering about 400 individuals; while they exacted full fare, going and coming, from 30,000 visitors; — carrying them, for fear of accidents, perhaps — to as well as from the Show, at the safe but not satisfactory speed of twelve miles an hour! We trust that on another occasion of the kind, visitors will find the fare diminished and the speed doubled.

The exact number of entries as they appear on the Secretary’s books, are as follows: Thorough-breds, 7; Stallions, of 7 years and over, 56; Stallions of 4 years and under 7, 34; Geldings, 136; Breeding mares, 53; Breeding mares with foal at side, 9; Matched horses, 33; Fancy ditto, 16; Stallions and Fillies of 3 years, 19; of 2 years, 10; of 1 year, 7; Farm and draft horses 6; Ponies 21. The total number of entries was 407, covering, as we reckon it, 472 animals.

The Morgan and Black Hawk breeds prevailed in the exhibition to an extent far beyond what we supposed to be the fact. In many cases, the breeds are not distinctly stated, or present such mixtures as not to belong to a distinct family. Among the breeding mares, we find 22 Morgans, 8 Black Hawks, and 3 Messengers; among the Geldings 31 Morgans, 11 Black Hawks, 9 Messengers, 4 Hambletonians, English and French, 3 each. Among the stallions of all ages, there were 50 Morgans and 22 Black Hawks.

The gross receipts of the Exhibition were nearly $10,000, while the expenses are estimated at $8,000. The leading items of those expenses, are the premiums, amounting to about $3,000, to which will probably be added many gratuities, over and above this sum, bestowed upon fine horses present from a distance; the erection of the high board fence around the lot and the building of the stalls and seats, which cost 1200 to $1500; printing and advertising; the banquet and the entertainment of invited guests. A large amount of minor expenses, many of which could not have been foreseen, and even now must be indefinitely estimat-
ed, were incurred. The Managers were liberal in their arrangements, in proportion as the certainty of success enabled them to be. The receipts for entrance fees for horses, amounted to from $1,600 to $1,700, and between $1,000 and $1,200 were taken for tickets to the banquet. The balance of receipts is from entrance fees from spectators.

THE HORSES IN THE UNITED STATES.

The Boston *Transcript* says:—"The first horses brought into any part of the territory at present embraced in the United States, were landed in Florida, by Cabeca de Veca, in 1527, forty-two in number, all of which perished, or were otherwise killed. The next importation was also brought to Florida, by De Soto, in 1529. In 1608, the French introduced the horse into Canada. In 1609, the English landed at Jamestown, in Virginia, having seven horses with them. In 1629, Francis Higginson imported horses and other domestic animals in the Colony of Massachusetts Bay. In 1625, the Dutch Company imported horses into New York. In 1650, the French of Illinois were in possession of a considerable number of horses.

"According to the census returns for 1850, there were 4,335,358 horses in the United States, *exclusive of those in cities, which were not returned*. The four and a-half millions of those animals in the United States, constitute a proportion of one to five of the inhabitants. New York has one horse to seven persons; Pennsylvania one to six and six-sixteenths; Ohio, one to four; Kentucky, one to three free inhabitants. In Ohio, and the new States of the Northwest, the increase of horses has kept pace with that of the population.

The number of horses in the United States is more than three times as large as that in Great Britain. A recent report in France shows that there are in that country 3,200,000 horses.
STALLIONS.

It is difficult to decide at what period of its history to commence our account of the Stallion-colt. If we begin at his birth, we are reminded of various matters antecedent to that—to him important—epoch, that have a material influence upon his after life. To be safe, let us go back to his progenitors.

As males communicate their organizations with the most obvious effect, it is by no means singular, that great stress is laid, by breeders of horses and other animals, upon the appearance, physical conformation and constitution of the sire. This is commendable. But farmers and breeders generally are not as fully aware as they should be, that various items, other than color, style and figure, are transmissible from sire to son. These are contracted feet, founder, spavin, ring-bone, curb, sandcrack, diseases of the eye, and of the respiratory organs, as broken-wind, roaring, wind-sucking, &c., &c. We are as fully persuaded, that these affections and diseases, are hereditarily transmissible, as that color, action or temper may be so transmitted.

At the late National Exhibition of Horses, held at Springfield, Mass., the writer was Chairman of the Committee on Geldings, in which class were 109 entries. Many of the finest horses subjected to their examination were found to be affected with ring-bone and other diseases of the leg and foot; and the reply to the questions of the Committee on this point, invariably was—"he was foaled so."

In this view of the case, it becomes breeders to look well to it, that the selected Stallion have no hereditary tendency to disease, or defect capable of being transmitted to the offspring; for "like begets like," and as surely as a noble steed can mark his offspring with his good qualities, so certainly can he hand down also, his imperfections of temper and formation.

If men are too often careless in the selection of a Stallion for purposes of breeding, what shall we say of their choice of a mare? Any old, decrepit, diseased, purblind she-horse, that can
be procured, or that is found fit for no other purpose, is considered good enough to breed from! And many such an old, good-for-nothing-but-the-compost-heap creature is kept by farmers and others for this especial and only purpose. Knowing this, one ceases to wonder, that the country is stocked with such a superabundant supply of miserable, early broken-down, and diseased horses,—insomuch, that he, who now-a-days undertakes to buy a horse on his own judgment, unless he goes with his eyes peeled, and "had his eye-teeth cut" at an early period of his existence, will, ordinarily, find himself sold remarkably cheap.

"Any one," says Mr. Castley, an eminent English Veterinary Surgeon, "who, during the last twenty or twenty-five years, has had frequent opportunities of visiting some of our great horse-fairs, in the North of England, must be struck with the sad falling-off there is everywhere to be remarked, in the quality of the one-half, and three-part bred horses, exhibited for sale. The farmers when taxed with this, complain that breeding horses do not sufficiently repay them; and yet we find large sums of money always given at fairs, for any horses that are really good. The truth is, that farmers do not, now-a-days, breed horses so generally good, as they used to do; and this is owing to the inferior quality of the mares, which they now commonly employ in breeding."

Some of the best mares, it would appear, are now purchased by gentlemen for saddle horses,—it being now, as it was not formerly, as fashionable to use mares, as geldings, for riding purposes. A great number of the finest three-part bred mares, also, are imported to the Continent.

These facts account for the deterioration of the horses in ordinary use in England, and most of them are in force here. Many an old broken-down creature is purchased, or kept for a breeder, because she is fit for nothing else! Fit for nothing else?—If fit for a breeder, (unless injured by some accident,) she is fit for anything else.

Sire and dam being judiciously selected, our next care is with the unborn colt,—the foetus. "Our next care," we say, for the
young courser may be starved, or otherwise maltreated, as effec-
tually before, as after, birth. The mare, when with foal, should
be well, but not too plentifully fed,—should not be overworked,
nor yet allowed to lack exercise, and should never be subjected
to such rough usage, as is but too common among farm hands
and stable-boys,—who are ever over-free with the toes of their
cow-hide boots. Discharge such at once, after having treated
them to "a little of the same," to see how they like it; for no
one taken down with the accursed disease of "Cruelty to Ani-
mal," was ever radically cured of it.

It is well to offer the mare, immediately, and, for a few days
after parturition, a drink of lukewarm water with corn or oat-
meal, or shorts mixed therein. She should then be permitted
to run out to grass for a month, at least, to recover strength;
though the common custom, we know, is to put them in harness
within a fortnight from foaling.

Our young Stallion being now fairly in the world, and mov-
ing upon it on his own legs, his first experience of life is stir-
ing. The old farmer has an errand at a neighboring village,
distant some six or seven miles. "Put Bessy to the old chaise," said he; and off drives with commendable moderation—little
Morgan trotting in company; but, business being concluded at
the store, rain threatens, or other cause induces a hasty return;
and we see Bessy doing all she knows how to get home in sea-
son, and little Morgan doing a little more—to keep up. His
long, lank legs soon get tired; his footing is unsure; his bel-
lows gets out of order; he is over-heated; he lays the founda-
tion of troubles, that are perfected in the full-grown horse.

For the first six months of his life, the chief food of the foal
is "mother's milk,"—although he will pick up, now and then,
a little else with all the pride of incipient horsehood. If the
mare be insufficiently fed during this period, or over-worked,
(which lessens her yield of milk,) the foal is, in either case,
half-starved; and a half-starved colt is almost never well made,
when he arrives at maturity. He is always a weed. He should
be well fed from, and before the time of his birth.

At one year old, though the colt has by no means attained
his fulness of form, it may be decided whether or not to retain him as a Stallion. If, at this age, however many good points he may possess, indications of contracted feet, founder, or any of the other diseases heretofore mentioned as transmissible, be seen, geld him at once. He ought not to serve as a Stallion.

At three years old, a horse may be allowed very moderate service. Over-taxation of his powers at this age—or at any age, for that matter—is short-sighted policy for the owner. As a four-year old, he will be more matured and full of vigor, and at five, he is still more able to do service. It is a too common fault—this over-taxation of a Stallion's powers; and it tells both on himself and on his get. The English limit for a prize horse, that "travels his district," is sixty mares in a season; but eighty are often covered, without prejudice. What shall we say of horse-owners, who boast of having had double these numbers served in a season by their horse—sometimes three a day!

A notable instance of the evils of over-taxing a horse's procreative powers occurred in England, many years ago, in the case of a celebrated stud belonging to H. R. H., the Prince of Wales. The groom was permitted to pocket a half-guinea fee from all comers; and it may well be guessed, that no applicants were refused. The consequences were serious to the horse, and to very many of his get. Another instance is within our knowledge. A Stallion of some repute in New England, was allowed to serve one hundred and forty-three mares in a season, and was then sold to go to Virginia. Most of the colts of that year proved to be miserable creatures; and in Virginia, in the year following, he himself proved perfectly impotent.

The small size of very many—I may say of a large majority—of our horses, is an evil that is great, and growing (like a cow's tail—downwards.) This may be attributed to a poor selection of breeding-mares; the scant feeding of the dam, before and after foaling—thus half starving the foal; bad usage of colts by stinted food or unsheltered exposure to cold and storms, and the general over-taxation of the powers of stallions.
We are well aware that some persons, who pass for wise men in matters of horse-flesh, contend that the smallness of size is no objection to a horse; and cite for proof the fact that some of the fleetest Arabian coursers are but 14½ hands high. Admit that these Arabian lightning-streaks are of so small a size, and what does it prove? Nothing. When the American’s horse has nothing to do, but to bear a hirsute, pinguid vagabond, over sand deserts, on hen-roost-robbing expeditions, 14½ hands will be high enough (until the rider rivals Haman.) But so long as the farmer has sward-land to plow, cord-wood to draw, and a stout wife and half-score of stalwart sons and buxom daughters to be driven to meeting, or to the State Fair;—so long as our city carriages are ponderous, and trucks weighty;—so long shall we need a little more height in our horses, and that not all in the legs.

The subject of increasing the size of our horses, will more properly be discussed in an article on Breeding Mares; for it is with the mare that the improvement must commence. To subject small mares to large sized stallions will not effect the desired change. It will give us, as it did to the Yorkshire farmers, who tried a similar experiment, “a race of long-legged, largeboned, small-chested, worthless animals.” Such, also, was the ill effect, said our lost friend J. S. Skinner, of the cross by a large “Cleveland Bay” Stallion, imported and sent to Carroll’s Manor, Maryland.

“The proper method,” says Professor Cline, of London, “of improving the form of animals consists in selecting a well-formed female, proportionally larger than the male. The improvement depends on this principle; that the power of the female to supply her offspring with nourishment is in proportion to her size, and to the power of nourishing herself from the excellence of her own constitution.”

“The size of the foetus (he continues) is generally in proportion to that of the male parent, and therefore, when the female parent is disproportionately small, the quantity of nourishment is insufficient, and her offspring has all the disproportion of a starveling.”
"To produce the most perfect formed animal," adds the same high authority, "abundant nourishment is necessary from the earliest period of its existence, until its growth is complete." This sustains the view that we have hereinbefore advanced.

ON THE CHOICE OF BROOD-MARES.

There can be no doubt but that the breeding of horses of a superior description would amply repay those farmers who are possessed of the requisite knowledge; and whose farms present a suitable combination of light, productive, arable land, with pasture of good quality. The price of first rate horses has advanced in a remarkable degree of late years, and is not likely to decline so long as the country enjoys an ordinary degree of prosperity. It is everywhere matter of complaint among buyers that good horses never were so scarce as at the present moment; and the man who is possessed of a weight-carrying hunter, or a fine carriage horse, will, if inclined to sell them, not find himself long without a customer. Still, notwithstanding these inducements, the breeding of horses on a large scale is confined to a few districts, of which the principal are the East and part of the North Riding of Yorkshire, Lancashire, and part of Northumberland. On the Yorkshire Wolds it is a pleasant sight to see, field after field, with its half-score of handsome colts; some of them adapted for the chase, while others are destined for London carriage-horses. Though not so plentiful as I remember them some twenty years ago, especially the higher bred ones, they are still to be found in sufficient numbers to show that the farmer considers them a portion of his stock productive of profit, and consequently worthy of attention. Even there, however, breeders might with advantage propose to themselves a higher standard, and aim at producing hunters of the first class, which would surely remunerate them better than
the leggy and somewhat underbred coach-horses, which are every
day less suited to the requirements of customers. One reason
why hunters are not bred there so extensively as in former years,
is, that farmers, either tempted by the high prices offered by
foreigners, or under the pressure caused by agricultural distress,
have, from time to time, parted with their best brood-mares.
Much as it is to be lamented that either good mares or stallions
should ever leave the country, there are, nevertheless, abun-
dance remaining from which to rear, with judicious manage-
ment, a valuable breed of young horses. In the hopes of afford-
ing some encouragement to the extension of this important de-
partment of agriculture, I offer the following hints:—

One of the most important elements of success is the choice
of brood-mares. Never breed from a mare which is not well
bred. By well bred I do not mean having many crosses of
blood; for many mares, nearly and even quite thoroughbred,
are very undesirable animals to breed from. A well bred mare,
in the true sense of the word, is one of which the progenitors,
for many generations back have been carefully selected. In this
respect Yorkshire breeders possess a considerable advantage over
those who reside in districts where breeding is less extensively
carried on. In the former country it is easy for a farmer, even
of moderate means, to procure mares which are above the sus-
picion of being tainted with cart-blood. Owing to the abun-
dance both of thoroughbred and "nag"* stallions, a roadster-
mare is seldom or never put to a horse of inferior stamp to her-
self. Thus with little or no trouble or cost, a class of mares is
in the hands of Yorkshire farmers which elsewhere it would re-
quire much expense and research to gain. With but little of
outward show to recommend them, they breed excellent hunters,
when put to a suitable thorough-bred horse; whereas mares of
similar appearance in other countries would only produce stock
fit for harness—if, indeed, they were good for anything. The
reason is, that in the latter case the cart or other inferior crosses
would re-appear, and thus baffle the calculations of the breeders.

*A "nag" is a roadster. He is less in size than a coach-horse, and better
bred.
Perhaps mares such as the Yorkshire farmers use are, on the whole, the safest for the agriculturist to breed from. Although not so high bred as some others, they are less expensive to purchase, and require less judgment in their choice than those of a more ambitious character. They possess one recommendation which the farmer should never lose sight of—I mean power. Let his object be to produce a colt which, if it fails as a hunter, will be useful in harness; or, if some accident should unfit him for fast work, will at any rate take his share of work on the farm. I know no better test of success than this, viz: That the colt which loses a portion of its conventional value, should yet retain its real usefulness. Always make strong, well-set-on forelegs a primary object. They should be placed forward, so as to be an efficient support to the animal; and the shoulder ought to stand backward, in order to allow the legs liberty of action; but it must be somewhat round and full, not thin and confined, which some persons conceive to be a fine shoulder. Never breed from either mare or stallion with a decidedly bad shoulder. An animal may dispense with almost every other point of excellence, and yet be of some value; but if it has a bad shoulder, it bears so thoroughly the stamp of worthlessness, that nothing else can make amends for this fundamental malformation. If your mare is tolerable in her shoulders, but not very good, endeavor to find a stallion which is particularly excellent in this respect. The fore-legs and shoulders being right, action usually follows. But this being a very important point, do not take it for granted, but subject it to your strictest scrutiny. For my own part, I almost think as highly of action in a horse as Demosthenes did of it in reference to an orator; at any rate, not even the most fabulous combination of beauty, breeding, temper, and shape, would induce me to buy a horse which did not possess it.

The foot ought to be taken up straight, by a graceful bend of the knee, and set down again flat, without any deviation either outwards or inwards. The most common faults of action are a sort of shovelling movement forwards, with the knees almost straight, and a sideways motion, either outwards or inwards,
with one or both feet. But it is quite possible for the knee to be too much bent, and the foot to be apparently pushed backwards when taken up instead of forwards, thus causing it to be set down too near the place whence it was raised. Objectionable, however, as such stand-still action may be in a hack, I should prefer it in a brood-mare to the opposite defect.

The great reason why action in the mare is so essential is, that she having the roadster blood ought to supply it; whereas, it is not always possible to find it in a stallion; it is, indeed, very rare to see a thorough-bred horse whose action is such as would be desirable in the park hack, the roadster, or the hunter. The racing man cares not, provided his horse's head is first seen at the winning-post, in what form he moves his forelegs. The qualities which win fame for the racer are speed, endurance, and pluck. The conformation most conducive to speed depends more on the back, loins and hindlegs than on the forelegs; it is therefore by no means uncommon to find horses, whose performances on the turf have been above mediocrity, with forelegs such as would not wear for three months on the road, and with action such as no man would willingly endure in his hack or his hunter. Thorough-bred horses, with every point such as the breeder would desire, combining power and beauty, equally excellent in their forelegs, their ribs, and their hindlegs, are not to be met with in every neighborhood, and even when found will seldom cover half-bred mares at all, and then only at exorbitant prices. These are the magnates of the stud which will not condescend to mates of descent less illustrious than their own. If, then, you cannot secure their services, you must avail yourself of the best within your reach. Supposing your mare has the forelegs of the action which I have recommended, you may safely put her to a horse which has tolerable forelegs, provided he is in general power, in pedigree, and in performance such as you desire. I mentioned in a former letter that I once put some mares of my own to "Tomboy;" his forelegs were by no means first-rate, and his front action was decidedly scrambling and bad; but my mares being excellent in both these points, their stock showed no traces there of their sire's deficiency. To breed colts.
with bad forelegs and insufficient bone, is to encumber your land with stock neither useful nor saleable. With mares of first-rate excellence in that respect, you greatly extend the range of stallions which it is safe to put to them.

I shall not enlarge upon other points of the mare in detail, for the reason that their selection may in general be left to the discretion of the breeder; and also, because there are many of them which in practice will be more frequently supplied by the horse than the mare. I must say, however, that I should not like to breed from a mare with a bad head or a small eye. Natural soundness, especially in the feet, is very important, and so is good temper. With mares, as with cows and ewes, there is a certain character difficult to describe, but which the experienced breeder knows by instinct, as belonging to those likely to produce good stock. It is not the largest, or the most showy, but those which have a certain refinement of form, and a graceful appearance of outline (which are as characteristic of the well-bred female as power and muscle are of the male,) which will most faithfully reflect in their offspring their own merits, and those of its sire. Many a large, showy mare, on the contrary will be provokingly uncertain in her produce; one year bringing a foal as much undersize as next year it is overgrown. Such a mare ought to be discarded as soon as possible.

By observing the course which I have recommended, farmers who exercise ordinary judgment will make as safe an investment as they would in the breeding of any other kind of stock. Their colts will make either hunters, carriage-horses, or hacks of a useful and powerful kind.

There is a class of mares much higher than that which I have described above; I mean those which combine great power with a pedigree little short of thorough-bred — mares which have in their youthful days been foremost in the hunting-field, and contended, perhaps not unsuccessfully, in the steeple chase. Such are the dams of the cracks of the Melton field, and of the victors at Liverpool and Leamington. But they are so difficult to buy, and so rarely in the market, that the majority of breeders have little chance of trying their luck with them. Their owners
naturally desire to secure a foal, when it may be a great prize, won at a small cost, and will therefore seldom be disposed to part with them. It requires, moreover, a more ripened judgment, and more mature experience, to select mares fit for the production of first-class hunters and steeple-chasers, than for the rearing of a less ambitious character of stock. The stallion to which they are put ought to be one of a superior class to the majority of the itinerant animals which secure the custom of so many farmers, simply because they save them the trouble of further inquiry. It may be laid down as a general rule that the horse ought, if possible, to be a better animal than the mare. Then there is the difficulty, even when a horse of tried excellence is found, of discovering whether his points and his blood suit the mare. The art and the science of breeding first-rate horses, are not to be mastered without much thought, trouble, and research. There is no royal road to it. He who wishes, in spite of every obstacle, to attain golden results, must adopt a course the very antithesis of the too common one, of putting some mare, because he happens to have her, to some horse, because it happens to come into his yard. He must never breed from a bad mare or a bad horse; nor must he grudge a few pounds spent in securing the best of either sex within his reach. A judicious outlay of capital will here assuredly not fail to reap the reward which has attended the improvement of every other description of stock.

Mark-Lane Express.

THE FECUNDITY OF MULES.

W. S. King, Esq.

Dear Sir:—You will probably remember some remarks that passed between us, at a recent interview, on the breeding of domestic animals, and on the fecundity of mules; since which time, I have consulted authorities and find they all agree in the fact, that adulterous unions, between the horse and mule, result (in successive generations) in offspring of the primitive type.

Enclosed I send you an article translated from the "Journal des Veterinaires, by Mr. Percivall, Editor of the London Vet-
ON THE FECUNDITY OF MULES,

As reported on, to the National and Central Society of Veterinary Medicine.

BY M. L. PRAUGE, V. S., OF PARIS.

The following is related by M. Lecomte:—

On the 30th December, 1844, a she mule, about twelve years of age, belonging to M. Duval, miller and farmer, at Montpinchon, aborted. The owner and the muleteer, when questioned concerning the event, declared, that in July, 1844, she experienced frequent horsings, and received several leaps from an entire horse, which were witnessed by the men looking after them; the mule herself soliciting and receiving the leaps with pleasure. One day, without it being known that she was in foal, the mule, loaded at the time with a sack of flour, slipped down upon the ice, after violent ineffectual efforts to regain her feet. Five days afterwards she aborted. The foetus was sent by M. Lecomte, for the inspection of the members of the Society, that the fact might receive every confirmation; and it is still preserved in the museum of the Alfort School, for which Lecomte had originally destined it.

Ancient authorities on this matter, both Greek and Roman,—authors, philosophers, physicians, hippiotrists and agriculturists, all mention the subject. Aristotle makes mention of a mule’s becoming pregnant; he also informs us of a she-mule having twins, and that according to the superstition of the age, the event was thought to presage disasters. Herodotus relates that during the siege of Babylon by Darius, the Babylonians offered no resistance, but, on the contrary, appeared upon the ramparts of
the city, and ridiculed Darius and his army; while one of them came forward and cried out—"Why, Persians, waste your time before our walls? You had better retire. When mules shall bring forth, you will capture Babylon!" Little thought the Babylonians that a mule had ever bred. After a year and seven months of siege, it happened that a mule of Zophyrus, son of Megabyus, which was employed in carrying his provisions, foaled; and the event became to Gopyrus the presage of the capture of Babylon.

Herodotus also tells us, that when Xerxes was crossing the Hellespont on his march to Greece, a mule brought forth a young one. Varro saw a mule produce at Rome.

Mayon and Denis assert that the she-mule and mare, when once in foal, go twelve months. Jules Osseguente says that the war between Caesar and Pompey was announced by the accouchement of the mule. Pietro Valeriano speaks of a mule foaling at Rome, in the year 1518; and adds, that the epoch was rendered celebrated by the Apostacy of Luther. Scaliger, in his commentary on Aristotle, says that a mule had young twice. Buffon cites the circumstance of a she-mule, in the island of St. Domingo, having given birth to a he-mule.

M. de Manzio, director of the Veterinary School at Naples, has taken considerable pains to make us acquainted with a similar occurrence in the parish of Anzano, province Capitanata, (Sicily,) in July, 1844, in a mare-mule, the property of Francesco Mastrangelo. In this memoir, M. de Manzio has been at the pains to make sketches both of parent and offspring. Nevertheless some doubt hangs over the genuineness of this produce.

It is worthy of remark, and observation seems to have confirmed its exactitude, that mares covered by stallion asses become invariably impregnated at the first leap, while the contrary happens between the ass and the horse. Speaking metaphorically the ass seems to corrupt and destroy the generation of the horse. Indeed, according to M. Lecomte, if we give a mare first the horse, and the next day, or the same day, or subsequently, give her a stallion ass, she will almost invariably produce a mule and not a horse; though the contrary to this does not happen when
the stallion ass is given first, and the horse afterwards, to the mare,—the offspring being still a mule. This is, however, a fact calling for confirmation.

Let us now inquire the reason why these hybrids prove barren; though we know that they are not altogether so.

Some authors assert that differences are to be found in the anatomy of their genital organs. Although various alleged differences in the organs themselves, or in their secretions or products, have been pointed out, we believe that they all need substantiation.

To Mr. Pouchet, of Rouen, are we indebted for what positive knowledge we possess regarding the operation of conception, he having lifted the veil of mystery in which the act was previously enveloped. In his beautiful and remarkable work, M. Pouchet has demonstrated:

1st. That mammiferous animals and the human species experience a spontaneous and periodical ovulation.
2nd. That ova are emitted at determinate periods, readily appreciable.
3d. That fecundation only happens when the passage of the ovum through the sexual canal coincides with the presence of the seminal fluid.
4th. That fecundation takes place either within the uterus, or within the horns or vicinous regions of the organ.

He has also shown, contrary to the opinion generally entertained that it is not through the *Aura seminalis* that fecundation is effected, but by the thickest of the sperm,—that part in which is really to be found the greatest number of spermatozoa.

Now let us consider the question, whether the ova of the mule are susceptible of fecundation, or whether it be that the sperm of the horse-mule lacks the property of fecundating. At the present day, it is incontestible that the ova of some mules are insusceptible of fecundation, notwithstanding their reproductive organs being perfect, and yet all mules may not be impregnable. What, then, are the causes of the infecundity of mules? Of this secret we remain ignorant, and in all probability ever shall. And as to the prolific property of the sperm of the male
mule we know nothing for certain, only that the animal is in possession of his organs complete.

Are the horse and the ass more likely to impregnate the she-mule than the he-mule is? To this question we may reply in the affirmative; but the ass is more likely to succeed than the horse, on account of the greater similarity of nature. Nevertheless, the greater number of mules are said to be bred from horses covering mare mules; though the reverse may have been the case. In regard to mules themselves, we know of no instance where fecundation has taken place.

In the instances we have related of mules having been known to breed, it may be remarked that they almost all have occurred in hot countries, such as Greece, Italy, Spain, Africa, &c.,—the one mentioned by Lecomte as occurring in the temperate climate of the West of France being an exception.

We shall terminate this report with a repetition of what we know on the subject in question at the present day:—

1st. That mules, male and female, between themselves, are incapable of reproduction;—are in fact, barren,—notwithstanding anatomy has failed to discover any defect in generative organs of either sex.

2d. That the she-mule, sometimes, admits of impregnation by the horse or ass, though this constitutes but an extremely rare exception; the reason of which, probably, may be less difficult to discover than the fact even of its infecundity.

To which we may add,—That such adulterous unions between horse or ass and she-mule, destroying as they do, the characteristics of the mule, would be sure to result, (through the parent with the offspring, as through the offspring between themselves,) in a return after several generations to products of the primitive type, that is to say, to the horse and the ass.
WHAT CONSTITUTES A PONY.

Applications having been made to the Executive Committee at the National Exhibition of Horses, by owners of animals for the transfer of such animals from the class of geldings, in which they were registered, to that of ponies, it became necessary forthwith to decide, for the purposes of the present exhibition, what points should be regarded as constituting a pony.

A committee of five was accordingly appointed by the President of the United States Agricultural Society to consider the matter, and to report thereon without delay. This Committee reported the following decision:

"The Committee finally determine, and recommend to the National Agricultural Society to publish as their opinion, that no animal of the horse family should be termed a pony which does not bear the distinctive marks of that breed,—that is, a heavy body, short head and legs, stout neck, with heavy mane and tail, and not over fourteen hands high; and that in all offers of premiums for this breed of horses, pure pony blood should be taken into account more than size and height; and such crosses of that breed with those of a large growth as come the nearest to the original idea of a pony, for which the Shetland should be kept in view as the type of the race. Those not possessed of the distinctive pony marks, whatever their size, should be ranked as small horses, and not ponies.

This decision has caused considerable comment, from those who were not aware of the circumstances under which it was called for and given. The following extract from an agricultural paper, will show the grounds of objection:

"In some sections the standard of fashion requires height rather than weight and substance; a horse of less than sixteen hands being regarded with but little favor, whatever may be his qualities in other respects. We are sorry that the influence of this absurd fashion has been injuriously manifested on some important occasions. At the late show of horses at Springfield, for
example, an attempt was made to rule out from competition those of fourteen hands in height, throwing them into the class of ponies. And although this proposition was defeated, the idea on which it was based evidently prevailed in the award of the highest premium.

"We are opposed to the fashion to which we have alluded, in regard to the height of horses, believing it to be fraught with pernicious tendencies in reference to the qualities of the race. We believe a similar fashion has been the means of deteriorating English horses, and if suffered to prevail here, it will produce equally disastrous results."

It is not well that mis-statements of this kind should go before the country unanswered and uncorrected. We know no section of this country in which "the standard of fashion requires height" at the expense of, or without regard to weight and substance; which, on the contrary, are everywhere regarded as the necessary concomitants of height in the formation of a desirable horse.

This fashion (which, if it were a "fashion" anywhere, would be correctly styled "absurd,") is said to have been injuriously manifested at the late Exhibition; and the idea on which it is founded, to have prevailed in the award of the highest premium, — namely, the premium of $200, awarded to the stallion Cassius M. Clay, by a Committee of which John Minor Botts, of Virginia, was Chairman.

We have not the authority of Mr. Botts, or of any member of that most competent Committee, for denying the truth of this assumption; but we are confident that it is utterly gratuitous and unfounded.

But the matter of most moment to us and to the United States Agricultural Society, is the assertion that "an attempt was made to rule out from competition those horses of fourteen hands in height, throwing them into the class of ponies." The only attempt made by any one of the officers of the Society, or of the Springfield local Board, was to prevent horses of fourteen hands and over from crowding into the class of ponies; — in
which there were but ten entries, while in the class of geldings there were one hundred and nine.

The call for a Committee was rendered necessary, and the discussions that preceded and followed their appointment were caused by the fact that in some sections of our country—New York City, for example—horses of 14 and of 14 1-2 hands in height are invariably termed "ponies." Hence many had the impression that their horses of that height, though possessing no pony blood, (strictly so called) could properly be classed as ponies. Hence, also, a native of New York, when appealed to for his opinion as to "what height shall constitute a pony," promptly replied "Fourteen and a half hands and under."

These statements conclusively show, we think, that all alarm at any attempt at the wholesale conversion of the small horses of the country into ponies, is groundless.—Ed.

---

**GREASE, OR SCRATCHES.**

**BY G. H. DADD, VETERINARY SURGEON, BOSTON, MASS.**

"The presence of grease is a pretty infallible test of negligent grooming."—Percivall.

Grease, or what is more generally known in the United States as scratches, is a disease of frequent occurrence. It probably originates, like many other cutaneous affections, in a foul habit of body,—a retention of morbid materials in the system, or more properly speaking, congestion of the superficial capillary vessels. The disease is said to be most prevalent in the cold months. We know that at this particular season the function of the skin is more or less interrupted; the insensible transpiration, being neither so regular, nor profuse, as in the warm months, must result in an accumulation of excrementitious material hence the difficulty.

The cavity just above the heels of a horse, like that under the axilla, or armpit, of man, is furnished with a large number of
exhalents—secreting and excreting glands; and when the animal is in a state of health, and these vessels in a normal condition, the moisture, (if it may be so termed,) keeps the parts soft and pliant, lubricates the external surfaces, thus preserving them against friction, irritation, and disease, at the same time the system is relieved from the burthen of a large amount of morbid matter. Sometimes the morbid materials are retained in the immediate vicinity of the parts, in consequence of the accumulation of filth on the surface, or from the chilling influence of a draught of cold air on the legs after they have been washed.

It is well known that variations in temperature always have a tendency to disturb, and partially check, the cutaneous exhalations; yet they cannot be set down as direct causes of Grease, though they may be classed among the indirect.

Mr. Percivall, in his lectures, thus refers to this disease: "The etiology of Grease throws considerable light upon its veritable nature. Horses who are at pasture, or in straw yards—in situations, in fact, where heat and cold are not naturally, and cannot be artificially, made suddenly operative upon the heels—rarely have Grease. Those that have Grease in stables, are mostly coach and cart-horses with thick, fleshy heels and white legs; who are subject to get their heels wet, and do not commonly have such pains bestowed upon them to dry their legs, as hackneys, hunters, and racers have. Indeed, among the latter Grease is a very uncommon disease. Such horses also stand in stables, hot and filthy from dung and urine, the very exhalations from the litter of which proves an additional excitement.

"Grease formerly made great ravages in the English cavalry and ordnance service; whereas at the present day the disease is scarcely known. This change for the better is ascribed to three causes:—to proper ventilation of the stables; the greater attention paid to grooming; and to the presence of a veterinary surgeon, who checks, at the onset, such a casual occurrence."

Sainbel, who wrote An Essay on Grease, for which he was presented with a prize by the Royal Society of Medicine in France, thus commences his paper: "Grease is, in general, a cutaneous, chronic affection; sometimes inflammatory, sometimes
infectious; and I have known it contagious. It invades the legs of horses, asses and mules; but seldom attacks those of the ruminating species. We are told that cow-pock had its origin in the transfer of the matter of Grease from the heel of a horse to the teat of a cow; and that the disease may be communicated to the human subject by inoculation with this matter, the same as with that taken from the ulcerated teat of the cow. Some have gone further than this; and said that glanders and farcy could be generated in this way. The accounts of these strange transactions, however, have made but little impression; for we hear nothing of them now-a-days; and that is not a very bad criterion of their want of truth and foundation altogether. I have heard Professor Coleman say, that there never was a well-authenticated case of cow-pock being produced from Grease; and I verily believe myself—though I do not know that the fact has been experimented on—that there is no truth of its being communicable among horses. In certain seasons and situations, the disease is certainly sporadic, (affecting a few at any time or season;) but, then, the causes are too manifestly operative among horses under the same circumstances, to refer its production to infection or contagion.”

The reader will perceive from these remarks that *proper ventilation of the stables*, good grooming, (which includes care and attention to the general management of the animal,) and the knowledge obtained of the laws of animal life and the conditions requisite for its perpetuity, derived through the medium of the Veterinary art, are the means of prevention best calculated to remedy the evil.

**SYMPTOMS OF GREASE.**

In the early stage of Grease, the primary symptoms attending common inflammatory affections, viz:—heat, tenderness, and tumefaction,—are generally present. On applying the hand to the heel and fetlock, the parts will be found hot, and, under pressure, the animal will evince signs of pain; the parts have a greasy feel, and the morbid matter, which oozes through the tegumentary tissues has a fetid, unpleasant smell. As the disease progresses, the parts become swollen—infiltreted with serum of a
morbid character;—thus increasing the inflammatory symptoms, and causing the animal much pain, which he usually evinces by occasionally *catching up the foot*, as it is termed. The offensive matter on the surface of the heels, now becomes more profuse; the hairs stand out horizontally, and, sometimes, even a long time after the animal is considered cured, the hair still continues to wear an unnatural aspect. This is owing, probably, to the fact, that the disease has extended to the hair bulbs. When the disease attacks both hind legs, the pain is sometimes intense, especially if the horse be plethoric, or his system is charged with morbid humors. In the latter case, the greasy discharge is very profuse; for the pent up waste matters have now found an outlet, which, according to principles purely hydrostatic, admit of a free discharge of the fluids of the body.

The symptoms, however, thus far detailed, apply to Grease in what may be considered a comparatively mild form—as we often observe it in horses used for general purposes in this city. In such cases, exercise, and light work rather tend to lessen the swelling and pain; than otherwise, and the patient, after having travelled a short distance, under a light load, seems comparatively free from lameness, which, together with òdemà, again returns after standing a few hours in the stable. If the disease is at this stage promptly met with skill in the application of suitable medicinal agents, it generally yields; but if neglected, it is very apt to assume the form of a pustular eruption, and, subsequently, granulating excrescences.

During the past year (1852) a mild form of Grease, usually denominated *scratches*, has been unusually prevalent in the New England States; the subjects of which disease, in a great majority of cases, were in a state of plethora. In short, there was an evident disproportion between the daily allowance of food and the amount of labor performed; or, in other words, an unequal proportion between the oxygen respired, and the amount of carbon (in the form of food) taken into the system at any given time.

Some of these cases yielded very readily to local treatment, while
others required active, general treatment,—a purification of the fluids and a restoration of the healthy secretions.

The disease after having passed the primary stage, as just alluded to, assumes a more malignant character. Granulated excrescences, and an offensive discharge appears. Sainbel compares such granulations to the "outward coat of a pine-apple;" and some call them grapes. The disease at this stage affects the general health, more or less; and the patient has sympathetic fever—the appetite is impaired and other functions, in a certain extent, are perverted. Cases of a very malignant character are recorded by veterinary writers, but the disease is so readily recognized, even by the merest tryo in veterinary matters, that the writer deems it unnecessary to extend these remarks further than to advise those who wish to perfect themselves in this peculiar branch, to consult the works of Mr. Percivall.

TREATMENT.

This will depend somewhat on the stage and intensity of the malady, and the state of the patient’s health. It is worthy of remark, however, that a great change for the better has taken place during the past twenty-five years. Among those who have been foremost, both by their influence and daily practice, in producing so favorable results, stands the name of Mr. Percivall. In the early period of the history of our art, notwithstanding popular prejudice favored the ancient, barbarous methods of cure, this individual advocated a system of medication, tempered with mercy, instead of barbarity. Let the reader understand, that, in those times, the most inhuman atrocities were perpetrated on the bodies of uncomplaining brutes, and the most destructive "remedies" were called into requisition, to fill up the measure of their woes; the law of humanity, as it applied to brute creation, was generally disregarded,—for it was only until cruelty to animals was made a penal offence, that the masses were restrained in their shameful career of ingratitude. Contrast the treatment recommended by this distinguished surgeon, with that of some others, whose chief agents for the cure of Grease were, corrosive sublimate, muriatic acid, antimony, lead, &c., and we are led to exclaim, that a humane surgeon is more to be admired than the hero of a hundred battles.
In the early stage of disease attention must be paid to diet, ventilation and cleanliness. If the heels are hot, and swollen, apply the following poultice:

Slippery Elm, powdered, - - Half a pound.
Fine Salt, - - - - 2 ounces.

Mix to a proper consistence with hot water, and when cool, spread a portion on cotton cloth, and bind it on the parts.

Should the horse be "humory," or even in "good condition" — fat — a mild cathartic will be indicated, consisting of:

Powdered Aloes, - - - 4 drachms,
" Gentian, - - - 2 drachms,
" Ginger, - - - 1 drachm.

Mix the above, (if a ball is required,) with honey; or, if it be more convenient to administer a drench, dissolve the mass in one pint of warm water, and sweeten with molasses.

On the other hand, if the horse shall be in poor condition, the medicine can be dispensed with, and a generous diet allowed, together with a meal of grass occasionally, if the season permits. If the patient does not improve in condition, we may infer that the disease will not mend until the health is restored; and in view of accomplishing that object, we recommend:

Powdered Gentian,
" Sassafras,
" Sulphur,
" Ginger,
" Fine Salt,
Oatmeal,

{ } Of each one ounce and a-half.

One pound.

Mix, divide into twelve parts, and give one, in the food, night and morning. In either case it will not be good policy to continue the poultices for any length of time; for, knowing as we do, from actual experience, that warmth and moisture combined, in the form of a poultice, are relaxing, and therefore enervating, and that Grease, in its early stage, is merely augmented issue, the poultice might have the effect, if repeated, of inviting fluids to the parts. Still the ingredients might be so com-
bined as to possess astringent properties; the following is an example:—

Slippery Elm, or Flax Seed,  
Powdered Bay-berry Bark, \[ \text{ad libitum.} \]
" Charcoal, \[ \text{equal parts.} \]

Mix. Perhaps with the addition of a small quantity of salt and blood-root, this poultice would form the most proper one in the advanced stage of the disease; for we are taught that astringents have a tendency to suppress the secretion; and the discharge, sooner or later, becomes arrested. After poulticing the parts, as the nature of the case seems to demand, we then endeavor to aid nature in her efforts at restoration, both by local and general means. If, for example, the heels crack, become dry, hard, and contracted, the surface should be smeared over with

Linseed Oil,  
Powdered Charcoal, \[ \text{Equal parts.} \]
" Sulphur, \[ \text{Equal parts.} \]

Mix the charcoal and sulphur with a sufficient quantity of oil to make it of the consistence of cream, and apply it to the parts, with a brush, night and morning.

The general means imply a restoration of all the secretions and excretions, by the use of alteratives; the following is a good example:

**ALTERATIVE MEDICINE.**

Powdered Sulphur,  
" Blood-root, \[ \text{Equal parts.} \]
" Sassafras,  
Cream of Tartar,  
Skunk Cabbage,  

Dose, half an ounce night and morning, mixed with the food.

There is one remedy which the writer has found well adapted to almost every case of Grease, or Scratches, and it is highly recommended by Professor Morton, of the Royal Veterinary College; it consists of:—

Pyroligneous Acid,  
Linseed Oil, \[ \text{Of each equal parts.} \]
Turpentine,  

Mix. Let the heels first be washed with luke-warm water
and Castile soap; after wiping them dry, apply the mixture. Repeat night and morning.

In order to keep down morbid granulations—denominated by some "proud flesh"—the parts may be sprinkled daily with one of the following articles:

- Powdered Blood-root,
- " Burnt Alum,
- " Bay-berry Bark.

Put on a good coating of one of the above articles; cover the sore with dry lint, and apply a bandage over all. It should be borne in mind that bandages should always be dispensed with, if possible; for they invariably irritate and inflame whatever parts applied to. This is owing to the high state of sensibility in the skin of the horse.

G. H. DADD.

---

**STABLE ECONOMY.**

**BY H. C. VAIL.**

**SHELTER FOR STOCK.**

There is probably no one thing connected with good husbandry, that deserves more attention, and receives less, than the management of farm stock. We see them herded, often, in open yards, exposed to the rigors of a northern winter, and to "the peltings of the pitiless storm;" or cowering in the fields, under the lee of some straw stack; — the weaker beasts yielding the warmest birth and the choicestpickings to the stronger. In this condition the luckiest animal cannot thrive, and the more unfortunate ones must suffer semi-starvation.

It must be obvious to the most casual observer, that this method of wintering stock is — to say the least — injudicious; and we can demonstrate to the intelligent farmer, that it is far from economical. Humanity should prompt men to guard from suf-
fering the animals committed to their care; but there are, alas! too many who heed not her voice. To such we must set up Self Interest as a devisor; and will therefore treat the subject as it affects the pocket-book.

The losses arising from the open yard system are three-fold. The first and most obvious is the amount of fodder wasted in various ways; — it requiring from a half to two-thirds more than when fed in stables, which is worth nothing to the farmer except as manure, and this may be more cheaply provided in some other way. The second loss arises from the additional quantity of food required to keep the animal in a certain state — admitting it possible (for argument’s sake) to keep them in as good condition at any expense, when thus exposed. The third and a very important loss arises from the great deterioration in the quantity, as well as quality, of their manurial products.

In order to arrive at correct conclusions, we must make ourselves familiar with the functions of the animal, and the part performed in their economy by vegetable productions; tracing the constituents of the latter from their elementary substances to their deposition as a part of the animal frame, and their resolution into their original forms.

Plants build up their structure steadily, and without waste of parts, until all is perfected; when the peculiar forces (known as vital) which have accomplished this, leave it, and the plant dies, and is resolved into its elementary constituents, — a portion returning to the earth, and the remainder to the air. By tracing the process of decay, we are enabled to arrive at the true composition of the plant; and we find that it assimilates from the earth and air all its parts, — deriving from the soil certain earthy salts, carbonic acid and ammonia, — (a large proportion, however, of the two latter being derived, directly or indirectly, from the atmosphere.) These substances are all taken up in a state of solution in water, and after having undergone certain changes, under the influence of light, heat, and other imponderable agencies, they are deposited in various parts of the plant, forming starch, sugar, gum, woody fibre, albumen, fibrine and caseine, and various salts, or inorganic bodies. The first four named substances
are composed of a solid, (carbon,) and the two gasses (oxygen and hydrogen) and are termed non-azotized, or non-nitrogenized bodies. Albumen, caseine and fibrine are also composed of carbon, oxygen and hydrogen; but, in addition, contain nitrogen,—forming what are termed azotized or nitrogenized proximates. The plant, in forming these substances, decomposes the carbonic acid taken up in solution, throwing off the oxygen into the atmosphere, and depositing the carbon in connection with the hydrogen, nitrogen and oxygen, contained in ammonia and water.

The nonazotized bodies (starch, gum, sugar, etc.,) are termed the respiratory elements; and the azotized, the elements of nutrition, serving to form muscle. These compounds are produced by the vitality of the vegetable world, from the simple forms of matter; and in this state, and this only, are they fitted to enter into the composition of the animal organism. The animal has not the power of forming compounds from simple elements; but assimilates, or appropriates those already formed by the plant, with but slight changes. The albumen, caseine and fibrine of the vegetable world are identical with the albumen, caseine and fibrine of the animal body, and are appropriated to form the organized tissue, which analysis proves to be composed of the same elements. The starch, sugar and gum contain the same constituents as animal fat, but not in the same proportions. The earthy salts, phosphates of lime, etc., are found in the bones.

The building up, or vegetative process, of the body of the animal is similar to that of the vegetable, both being under the direction of vital forces; but in the animal there is a constant waste of parts; a result of motion, the source of which is contained within itself; while the motion in the plant, in part, depends on outward causes. This source of motion is dependent on the chemical changes continually going on in the system, owing to the introduction of oxygen into the organism; and the state of rest, which any particles may attain, is owing to their combination with other particles, and the attractive force or affinity existing between them.

The food taken into the stomach of the animal, undergoes
certain changes, by the process of digestion. It then passes into the intestines, from whence the proportion required by the body is absorbed, and carried into the circulatory system and deposited as fat, tissue or bones;—the remainder being thrown off as excrementitious matter or that which is unfit to enter the organism, or when larger quantities are presented than can be digested and assimilated. The lungs take in atmospheric air, the oxygen of which unites with the blood. On its passage through the system the oxygen of the blood unites with the carbon of the fat, forming carbonic acid; and with its hydrogen, forming water. The blood then passes through the veins, and ultimately into the lungs; where the carbonic acid and water pass off into the atmosphere, and a new portion of oxygen uniting with the blood, the same process is repeated.

These chemical changes continually going on in the animal body produce animal heat in every part. Now if the animal heat is dependent on the chemical changes,—on the formation of carbonic acid and water in the body, the amount of heat must certainly depend on the quantity of oxygen inhaled. If oxygen is taken in, in sufficient quantity to oxydize the fat, etc. of the body, as fast as deposited, the animal cannot increase in bulk; and if taken up in greater quantity, the organized tissues are metamorphosed,—the animal becoming reduced in size and weight.

There is no better proof of this required, than the case of a starving animal; where we can see the daily waste of fat and flesh, and at last of the bones. Thus we see that fat furnishes the means of producing the heat essential to the welfare of the animal, and also protects the organized tissues from oxydation. Locomotion, exercise and hard labor, all tend to increase the amount of oxygen inhaled, and consequently, the waste of food consumed.

Heat is one condition of life, and the animal body is a heated mass, containing within itself the means of generating more heat. It holds the same relation to other bodies, that any heated mass does, that is constantly giving off and receiving heat.

Knowing these facts, it is not very difficult to perceive why
animals exposed to cold atmosphere, should require more food than those provided with comfortable stables. We have only to study Nature in her operations, to learn the proper modes of treating our animals. During the summer season, when the weather is warm and the atmosphere charged with vapor, and when there is, consequently, less oxygen in the same bulk of air, their food is succulent; less heat is produced, because less oxygen is taken into the system, and more fat is deposited. For these reasons, many prefer to fatten their cattle in the summer and fall. In winter the food that served during the summer season is dried; that is, a large proportion of moisture is parted with, and it abounds more largely in compounds containing carbon, in order to supply the extra amount required to keep up the heat, which is so rapidly parted with by radiation to the atmosphere, and surrounding bodies.

Thus we see why the stock of the farm, when exposed to the rigors of winter, and the sudden changes of the weather, grow less in weight, and become restless; why less amounts of milk are secreted by cows, and why cattle do not fatten readily, if at all. These facts all point to the necessity of providing warm, well ventilated, cleanly stables, and a proper supply of roots, to afford the succulence presented by the grass of summer; so that nearly the same state of affairs will exist in the one season, as in the other. Thus, the amount of milk secreted will be greater, and the increase in bulk of the animal will be more rapid; while the expense for food will be materially lessened.

MANURES.

The third loss occurs in the decrease in amount and value of manures produced. The liquid manures are almost totally lost. Every farmer must be aware that the manures of the farm are composed of the substances which formed the plant, consumed by animals, or which were reduced to a fine state of decay.

If the results of decomposition be examined, they will be found to be carbonic acid, water, ammonia and earthy salts,—just the same bodies from which the plant first formed its structure. Now if these manures are to aid in the growth and development of
a new race of plants, it is certainly to the farmer's interest, to retain all the parts essential to such increase of mass. When manures are exposed to the action of rains, all the soluble substances — those fitted for immediate assimilation — are washed away; and currents of air continually take up the ammoniacal and other gasses, which are volatile, wafting them to some point, where they will be of no service to the farmer. The treading of animals continually presents new surfaces to the action of the atmosphere, and thus hurries up the waste of the more valuable portions of the manure.

STABLES.

To obviate all these difficulties, provide warm, well ventilated stables, with high ceilings. The air should be admitted at the bottom, near the floor, and have free exit at each end, over the cattle, by means of a pair of movable blinds, or any other arrangement, that would suggest itself to an ingenious mind. Never allow any drafts of cold air to enter, but keep up an even temperature by the slow, but regular, admission of fresh air, and the constant outward flow of the portion rendered impure by the respiration of the animals, and exhalation from their bodies.

There are various methods for fastening cattle, from which each may choose that best suited to his own ideas; always remembering to give freedom of motion to a certain extent, and yet not allow an interference with each other. Suitable troughs should be provided for the reception of hay, roots and water. They should be kept clean and sweet. In each, place a lump of rock salt, so that each animal may consume just what is required, and as nature demands it should be supplied. If fed only once or twice a week, they will consume more than is necessary; and thus injure themselves.

FOOD, ETC.

Those animals intended for fattening, may remain in the stable constantly; care being taken to provide pure fresh water at least twice a day, with the necessary amount of well made hay, which should not be given in large quantities. Roots should be provided along with the meal apportioned to each, and such changes
should be made, as will tend to preserve a keen relish for the fodder presented each day. If corn stalks are fed, they should be cut and steamed, and a small quantity of salt sprinkled over them. The straw used for litter should be cut, so as to render the handling of manures a less difficult matter.

Cattle not intended for fattening, may be allowed to exercise in the open yard, during the warmer portions of the day; and should have plenty of water from a convenient point near the stables, to prevent the necessity of driving them long distances, through stormy weather,—thus leaving their manure exposed along the pathway, a total loss to the farmer. The food of milking cows should contain enough nitrogenous compounds to favor the secretion of milk, which contains a nitrogenous body—caseine. The use of roots will cause an increase in the bulk or quantity of milk.

The animals should receive a good brushing in order to remove all impurities, at least once a day. The walls of the building should be whitewashed frequently to remove vermin, and purify the atmosphere. Every part of the stable should be kept clean, and the floors frequently sprinkled with charcoal dust, or other absorbent material.

MANAGEMENT OF MANURES.

There are several methods of disposing of the manures. The most common practice in this country is to throw them out helter skelter in the open air, where the portions most valuable are soon gotten rid of, and purchased at a dear rate in the form of Peruvian guano, or other concentrated artificial fertilizer. It requires no argument to prove that such a course is highly injudicious, and therefore should not be followed by a practical farmer. Most farmers are careful to save the solid manures, and protect them from the weather, but pay no attention to the liquid portion, which is considered quite equal to the solid in effect.

The method practiced by a few in this country, and in quite universal practice in England and various parts of the continent of Europe, is to have the stables so constructed as to allow the liquid manures to flow into cisterns or reservoirs, where it un-
dergoes fermentation, is then diluted with water, and carted out and sprinkled over the land, or else pumped upon heaps of muck or rich soil, and used the same as any other manures. The solid manure is removed to a shed and deposited in snug piles, or else built up in dung hills in the open air, these being pressed down by driving carts over them, for the purpose of retarding fermentation. The whole is covered with earth of some kind.

Another method practised in Germany, is to construct buildings, into which all manures are thrown as made, and water or liquid manures continually passed through, and the whole applied in a diluted state.

The best, most economical, and effectual method is the one advised by Prof. Mapes, and adopted by many farmers. It is substantially as follows: A large pile of muck, peat, or headlands, decomposed, by the use of the "salt and lime mixture," is placed near the stables and manure sheds. Under the hind feet of the cattle a ditch is dug, and covered with hydraulic cement. In this, place a large quantity of the prepared muck and cover over with coarse litter. When the animal voids urine, it is at once absorbed by the muck, and the warmth of the animal promotes the further decomposition of both. The solid manure is removed daily, and mingled with many times its bulk of muck, and thrown into a compost heap under a shed. The muck under the cattle is renewed every ten days, placing that removed on the compost heap—a cistern or large hogshead is sunk at the lower point of the heap and filled with liquid drainings, spent lye of soap-boilers, or water. This is to be passed over the heap twice or three times a week, or as often as necessary, by means of an old pump. The constant passage of water will prevent the fire fanging of the manure, by allowing the free admission of the atmosphere. There is no fear of producing too rapid a decomposition, because the muck presents the means of retaining all the products, in a secure state and ready to be assimilated by plants. This method of treating manures prevents the necessity of frequent turnings for the admission of air, and is more effectual than many forkings, without so much loss attending the operation. The heap should at all times be kept covered with a
heavy coating of muck. When ready for use, each load of compost will be found more valuable, than the same amount from manure left exposed to the action of the atmosphere.

These are mere suggestions made to the truly practical, intelligent husbandman, who may adopt such plans of procedure as best comports with his views, and the circumstances by which he may be surrounded. It is impossible to do these subjects justice in so small a space; volumes might be written on each. There is room too for many well conducted, accurate experiments; and we desire that farmers will enter into the subject fully, so that correct data may be afforded for future practice.

THE VENTILATION OF FARM BUILDINGS.

At a numerous meeting of the Hexam Farmers' Club, James D. Ferguson read the following paper on the Ventilation of Farm Buildings.

The proper ventilation of farm Buildings is a subject which hitherto, I fear, has not much engaged the attention of architects; for, although we occasionally see around us, while travelling through the country, evidence of the enlarged views of landlords expending large sums of money in building handsome farm steadings, and thereby greatly enhancing the value of their estates, by encouraging the enterprise and skill of their tenantry, yet, so far as I have had experience, I have never observed any proper provision made in new buildings either for the admission of pure air to, or the escape of impure air from, houses where cattle are confined. I believe it will be generally admitted by all practical farmers, that it is a matter of serious importance, in order that farm stock may at all times be kept in a healthy and thriving state, that a proper mode of ventilation ought to be introduced in farm buildings, without which it is impossible, notwithstanding well planned houses, and the great-
est care on the part of farm servants, that either horses or other cattle can be kept free from disease. In the first place, I shall advert to the style of old buildings, and point out the method which in my opinion, ought to be adopted to make these more healthy for cattle than at present I believe many of them are. In the second place, I shall endeavor to show in what manner our farm buildings are generally very defective in ventilation, as well as in the proper size and arrangement of the various houses for the confinement and management of cattle, and then point out how these, as well as new buildings which may in future be erected, may at very little expense be improved, so as to make them healthy abodes for cattle. In the third place, I shall point out where some progress has already been made in introducing a cheap mode of ventilating farm buildings, as well as a proper system of keeping the stables and cow houses, or feeding byres, always in a clean and healthy state, and then conclude my remarks, by making some general observations on the subject. Almost every one knows, that in former times, scarcely any plan or data whatever, appears to have been observed in planning a farm steading. Sheer, but mistaken economy, in the erection, seemed to be the only point aimed at, for we have evidence in hundreds of places, and in all countries, of the various houses for cattle (evidently built at different periods,) being not only badly planned and arranged, and in many respects too small in size, but no provision whatever, made either for the access of pure air into the buildings, or the escape of impure air from them, except that which I believe arose from mere chance, and which generally happened to be bad workmanship in fitting the doors and windows, which allowed the free access of fresh air at all times into the buildings, while the vitiated air was allowed to escape through the thatched or tiled roof, which in former days, covered almost every building for farm stock; hence the reason why, in these houses, although often very cold, uncomfortable, and small, cattle (notwithstanding direct currents of cold air into these buildings which, if possible, should always be avoided,) were generally much more healthy than they are now, in close confined houses under air-tight slated roofs; and the reason of this is, they were not subjected to such sudden
transitions from heat to cold, and *vice versa*, as in many places they now are, when turned out to the fields, after having been shut up in warm, badly, ventilated houses, such treatment is sure to engender disease. In old buildings, where the roofs are covered merely with grey sandstone slates, tiles, or thatch (and perhaps, gentlemen, some of you even at present, may rent some house such as these,) I would venture to recommend that, except keeping the roofs water-tight, they should be allowed to remain as they are, rather than try to improve them, as there will be abundance of aperture or crevices through which the heated and impure air will escape; but in order that a good supply of fresh air, equally essential, may at all times be admitted in an undulating manner, (for all direct currents should, as I stated before, be prevented,) air holes or ventiducts should be made through the wall behind the cattle, at say every ten or twelve feet on each side of the entrance or outside door. Into these openings, which may be made through the wall two feet above the floor (the reason of which I shall state by and by,) tubes of wood or iron should be inserted, four or five inches diameter, or they may be made square with a grating on the outside end, to prevent the ingress of rats or mice. The outside end of the tube should be made flush with the wall when fixed in it, and its length should be five inches less than the wall’s thickness, in order that a groove may be cut of that depth and width from its mouth downwards to within six inches of the floor. On this groove a thin flag or board of two inches in thickness should be fixed flush with the wall inside, and the air is admitted indirectly into the building below the end or bottom of the flag, and about six inches from the floor, by an aperture which will be five inches wide and three deep. The same effect may be produced if tubes are dispensed with, if the job is done in a careless and slovenly manner, but I would recommend tubes as being certainly more tidy and workmanlike; but either plan is very simple and cheap. A more efficient method, however, in my opinion, of allowing the admission of fresh air into a building, and at the same time, regulating the quantity, I shall by and by have occasion to advert to, and point out how it may easily and cheap-
ly be effected. You are aware that it is a very common method to admit fresh air into a building for farm stock by latticed windows, but as these allow a direct current of cold air at an improper place, the plan is certainly objectionable, at any rate for stables, which ought to be kept at a temperature of about 55° in winter, and from 60° to 65° in summer. Cow byres, however, should be kept much cooler, and therefore ought to have more air holes or ventiducts than stables; which would allow a temperature ranging from 55° to 60°. It is important for the health of cattle that the dung in stables and byres should be removed every morning, and a little gypsum scattered over the channel or gutter, which is a good deodorizer or disinfectant; or, what is much better, be completely flushed out with water, and then conveyed either in an open channel or in socketed pipes to a tank which ought to be situated in every steadings, whether old or new. This prevents any injurious effects from the ammonia or emanations arising from urine, which, in close confined stables, tends greatly to destroy the eyesight as well as the health of horses, and moreover its escape is a very great loss to tenants; but the proper mode of cleansing and purifying stables and cow houses, &c., I shall more fully detail in the next section of my subject, when I come to treat of the best system in my opinion, of ventilating new farm buildings. In regard to recently built steadings, the following arguments will apply to them, as well as to buildings which may in future be erected, and, in respect to buildings already in existence, I may state that, although many plans have been introduced to admit fresh air into a building for cattle, as well as in the escape of impure air from it, such as holes made in the walls at various heights and distances apart, sometimes before and sometimes behind the cattle, and in some lately built steadings which I have seen, the ventilator or escape vent is made on the side of the roof, and even it is not uncommon that skylights are made to open, to serve as ventilators as well as for the admission of light.

All these methods in my opinion are bad, for this simple reason; these openings are made in the wrong place, and moreover no control can conveniently be used to regulate the power of
these ventilators, unless it is the very clumsy and often exceedingly inconvenient method sometimes adopted by servants, of putting a wisp of straw into them in cold weather, for the purpose of raising the temperature in the building, or in other words, retaining the heated air which has been deteriorated or made useless by frequent respiration. Now, gentlemen, the model of a ventilator before me, the working of which I shall explain to you by and by, is a simple, cheap, and efficient contrivance, which in my opinion is well calculated to allow the escape of vitiated air, from a cow-house or stable, if set where it ought to be on the apex or highest part of the roof, by the simple process of pulling a cord. This contrivance might also be applied with good effect for the ventilation of churches and school houses, for in these buildings the absence of a proper and simple mode of getting quit of the foul air is sometimes not only very seriously felt, but it is at all times most injurious to health, especially when these houses are in a crowded state. Allow me for a little to offer you my opinion in respect to the proper size or dimension of houses for the feeding of farm stock, and the method by which they may be cheaply and efficiently ventilated. But I may state here, in passing, that I believe the time is not far distant when we shall see excellent and cheap farm steadings all under one roof, railway stations being good data from which a design might be obtained. According, however, to the present mode of building steadings, a feeding byre or cow-house for one row of cattle when tied up, should not be less in width than 18 feet within the falls, including a passage at their heads for feeding 3½ feet wide. The side walls should not be less than 10 feet in height above the floor, and ought to be made smooth with one coat of good plaster, and once at least each year should be carefully washed with hot lime, which makes the atmosphere in the building sweet and healthy for the cattle confined in it. A stable ought to be in every respect (except a passage at the head of the horses, which is unusual,) of the same size, and above neither cow-house nor stable ought there to be on any account, any loft or ceiling whatever, but open entirely to the roof, which should be slated on sarking boards, and of the usual pitch.
The walls, of course, of the stables ought also to have one coat of plaster, and be carefully lime-washed at least once, if not twice, each year.

Now, in order that such houses may be properly ventilated, that stock may be kept in them in a perfectly healthy state, ventilators, which may be made three feet long by two feet wide, should be placed on the apex or highest part of the roof, for this reason, that impure or vitiated air in the building, being heated and consequently lighter than the cold air, always rises upwards and vertically, (provided fresh air in sufficient quantity is admitted below,) and flies off by any aperture in a line above it, which may facilitate its escape, and, therefore, out of reach of respiration. This is a beautiful law of nature, for had it been the reverse, that the specific gravity of foul and heated air was heavier than cold air, as some erroneously suppose, then it would have been continually floating on the surface or sinking into it, and consequently neither the animal nor vegetable creation could have existed for a day. This theory may be proved by any gentleman present riding his horse pretty sharply for a mile on a frosty morning. He will observe the vitiated air, which has passed through the lungs of his horse, expelled from his nostrils at every pulsation, and in place of its being heavy and falling to the ground, rise upwards and escapes beyond reach of being breathed again. This is a proof that cold or fresh air should always be made to enter indirectly at the bottom of a building, for where air holes or openings are made for ventilation four or five feet from the floor, as I have sometimes seen them, they are of little or no use whatever, for they neither allow cold air to get into the buildings at the proper place, or in a proper manner, nor heated air out of it; for, as I said before, it rises directly upwards, and, if there is a ceiling, spreads along it horizontally, being unable to escape, and consequently condenses or distils on the cold surface, dropping down on the cattle below. This probably may have been noticed by some of you again and again. Now, when we afford means for the escape of the foul air at the proper place in a stable or cow-byre, we must not lose sight of the absolute necessity of obtaining fresh supplies of pure air,
which should always be admitted into a building at a low level, for the very purpose of lifting or pressing upwards the impure air, which will not ascend otherwise, for exactly in proportion as the cold air is admitted below, while the vitiated air which has been rendered useless by frequent respiration, be expelled or forced upwards, and it therefore follows that an opening in the highest part of the roof should be made to allow its egress, and that opening should be formed in such a manner that direct currents of cold air may not obstruct its upward tendency. I must not omit, however, to notice, that if the dung and urine of cattle are not carefully removed every morning, and the channels behind them well flushed out with water, as before observed, in vain may the farmer look for healthy stock, however suitable his houses may be; for, depend upon it, ventilation will not cure disease, although it will go a long way to prevent it, if assisted by order and cleanliness on the part of careful servants. And here I may observe that, at all times, servants ought to be allowed by their masters proper time for this part of their duty, for assuredly no part of their employment will in the end remunerate the farmer better, than when their stock is carefully and faithfully attended to. In respect to cattle boxes, where perhaps two cattle are loose and fed together, the dung there, if the cattle are littered every day, may, without fear of doing injury by any offensive emanations, be allowed to lie for a month or six weeks, because, as the dung is firmly trodden down by the cattle going loose, the ammonia cannot escape, and hence no injury can arise. When the dung is removed, a little gypsum thrown over the floor (if water cannot be had), will completely absorb the ammonia and moisture, and the atmosphere again become healthy. I now come to the third part of my subject, which is, to point out where some progress has already been made in introducing a cheap mode of ventilating farm buildings, as well as a proper system in my opinion of keeping stables and cow houses always in a clean and healthy state. This, gentlemen, may be seen in some of the farm buildings belonging to Wentworth Blackett Beaumont, Esq., M. P., on his estate of Bywell, and if any of you have a wish to visit these steadings for the purpose of ex-
amining the method of ventilation and other improvements introduced there, some of which I believe are entirely new, I shall have much pleasure in showing them. I suppose the most of you may have seen, or at all events may have heard, of the large and well arranged steading of Nafferton, which in some respects is certainly one of the most extensive and best, to be seen in any country. It measures 509 feet from east to west, and from north to south 261 feet, and that exclusive of the corn barn, which projects sixty feet north from the line of the square. The expense of this steading I am informed, including the stack-yard and garden walk, was nearly £7000. Yet, notwithstanding that immense sum, and the good arrangement generally of the various houses, no attention whatever seems to have been observed, in affording sufficient ventilation or light to either stables or feeding byres, and the consequence has been, that the respected tenant of that farm has from time to time suffered much loss in his horses, which I believe has been occasioned very much by the absence of sufficient access for obtaining good supplies of fresh air to his stables, as well as proper apertures for the escape of the vitiated air from them, and moreover, I have no doubt occasioned partly also by the negligence of the farm servants in not carefully removing the dung and urine every morning. The stables are only sixteen feet wide inside, and the side walls a little more than nine feet in height, and they contain stalls for twelve pairs of horses, and although there are no lofts or ceilings in the stables or cow houses, yet the roofs, which are air-tight slated ones, having no proper escape vents; when cattle were confined in these houses (they are now somewhat improved as to ventilation), and the door shut, it was scarcely possible in warm weather to breathe, and the consequence was, that the heated air, not being able to escape, condensed on the lime with which the slates are rendered, and caused it again and again to fall off.

Notwithstanding all this, the tenant about a year ago, believing that the heat from the slates was the cause of injury to his horses, applied to have a ceiling put above them in the stable. This assuredly would have added to the evil, as then proper
ventilation would have been much more difficult, as ventilators must then have been taken through the ceiling, which would have incurred considerable expense without affording a proper remedy. We have therefore put (in lieu of a ceiling) a few ventilators on the ridge or apex of the roof of the stables, to facilitate the escape of the heated air, and have made proper air holes or openings along the bottom of the wall six inches above the floor, for the admission at all times of a good supply of fresh air below, by means of iron tubes with gratings on the outside, exactly in the same manner as I have pointed out and recommended in the beginning of this paper. Water being conveyed to that excellent steading by pipes, enabled me to introduce it into the stables, which before had never been thought of. A spigot or tap is fixed on the end of a lead pipe and inserted in the wall about three feet in height at each end of the building in a line with the channel behind the horses, and a grated chamber in the middle, from the bottom of which a four inch socketed pipe is laid to the tank in the steading. The gutter or channel is flushed out once or twice every day after the dung is removed, by opening these spigots, and the atmosphere in the stables in this way is rendered sweet and wholesome, while at the same time the contents of the tank are considerably increased. We have therefore reason to believe that, if anything like proper care on the part of the farm servants is observed, the horses and other cattle ought to be in a much more healthy and thriving state than hitherto. The new farm steading of Shilford, designed by myself, and now all but finished, is another instance where these improvements may be seen carried out in some respects on a somewhat better scale than at Nafferton. The steading is, however, comparatively a small one, to accommodate the farm, which is not large, and therefore the dimensions of some of the houses are less than I would have considered myself justified in recommending, if the farm had been extensive, for it is well known that is is much more expensive to build a good steading for a small farm in proportion to the rent, than for a large one. The stables and cow byres, the walls of which are plastered with lime, are therefore only sixteen feet wide, the
same as at Nafferton, and the side walls nine feet or a little more in height, whereas, had the farm been of large extent, the width of these houses would have been, as I stated before, eighteen feet at least, and the side walls ten feet in height. A good supply of water is brought from a high elevation in iron pipes, and the channel in the stables and cow byres are flushed out every day into grated chambers in the middle behind the cattle, and conveyed in socketed pipes to a circular tank within the stading, in which there is a force pump. This pump is wrought by a power from the steam-engine, and the tank is emptied while thrashing into others at a considerable elevation, and these again are afterwards emptied from time to time by gravitation to irrigate a few acres of grass lands in the neighborhood of the stading. In the fold yards, riding horse stable, calf house, boiling house, &c., water is also supplied for the purpose of cleansing these houses and increasing the contents of the tanks, and with good ventilation and light, of which we have taken care to afford a large supply, we feel confident, that if the farm servants are careful in their management, the cattle cannot but be always in a sound and healthy state, at least so far as good farm buildings are concerned. The houses are all ventilated in the manner represented by this model, but the cow byres have the appendage of two air chambers and dampers, each damper being made to work flush with the inside of the wall, which being exactly similar to this model, allow the ingress of a portion of fresh air below, while the impure and vitiated air escapes above, and this by the simple operation of pulling a cord, which any girl can do, and thereby, by having the help of a thermometer hanging on the wall, can at any time regulate the temperature of a stable and cow byre. The whole, however, will be better understood and I hope appreciated, if seen, and it will afford me much pleasure to show these farm buildings to any gentleman who takes a pleasure in seeing substantial and convenient stedings. I should like, therefore, that twenty or thirty of us would on an early day surprise them with a visit. Now, gentlemen, allow me to conclude my remarks by making one or two observations on the value and importance of ventilation of houses generally.
There cannot be a greater mistake than to suppose, that either human beings or the brute creation can long enjoy good health, if shut up in close confined houses, and yet how often do we see, even in human dwellings, the greatest care taken to exclude the free circulation of the pure air with which a kind Providence provides us, and that without money and without price. Next to order and cleanliness, in respect to all filth and offensive matter which ought to be carefully removed from dwellings to a distance every day, the free circulation of air, by throwing open all doors and windows for an hour or too every good day, ought to be carefully and scrupulously attended to, by every family occupying a house, however humble or wherever situated. Some time ago, I was greatly astonished to hear of the opposition by some gentlemen in this town, to the “Health of Towns Act” being applied. Doubtless the expense which will necessarily be incurred in carrying out that important improvement was in some respects a reason for such opposition, but when compared with the blessings which it will confer on every inhabitant, were it nothing else than in procuring (which can be done very easily and cheaply by gravitation) a good supply of pure and wholesome water for domestic purposes, as well as for occasionally flushing out the abominable and filthy lanes and drains in the town, opposition to that sanitary measure ought not, by intelligent men, having the interest of the town sincerely at heart, for a moment to have been thought of. Gentlemen, I know few places which might be made more healthy, or more pleasant in which to reside, than the town of Hexham, provided there were at command at all times, for the sake of cleanliness, a good supply of pure water, without which, depend upon it, drains and pipes in any town, however well contrived, do no good whatever, but much evil, unless constantly flushed out. Without a copious supply of water, they soon get silted up with all kinds of refuse and decomposing matter, and the offensive gasses which constantly emanate from them at every opening are most poisonous and suffocating. The dreadful pestilence which has lately visited this place, and which may continue to linger for some time before it takes it final departure (unless the utmost vigilance
is observed), invariably first finds its victims in towns where the people live in close, neglected, and confined places, in the midst of filth and nastiness, and when once the atmosphere gets poisoned and contaminated, by the fetid odor, the better localities are of course very soon infected and often many valuable lives in consequence are carried off. This is a proof that all good sanitary measures should not only be encouraged, but effectually carried out without the loss of a day, for futile and vain would the ventilation of houses be, however systematically carried out, if, by the sheer negligence and slothful habits of people, the noxious and poisonous effluvia arising from abominable streets, lanes and privies, is allowed to be blown about, contaminating the atmosphere, baffling the skill of the best physicians, and carrying destruction and death to hundreds and thousands within its influence. The very same arguments apply to the brute creation, for however perfect the ventilation of farm buildings may be, if the dung and urine of the cattle in stables and cow-houses are not carefully removed at least once every day, and the channels behind them carefully flushed with water, it will be foolish and absurd to expect that such farm stock can long be kept in a sound and healthy state.

In respect to ventilation, this is no theoretical notion, for I shall give you an illustration of the fact. Some years ago, I had occasion to look into a gentleman’s stable where two or three pairs of carriage horses were kept. The coachman, with whom I entered into conversation, mentioned to me that he could not get his horses into condition, as they would not eat their food, and that when he opened the stable door in the morning, he often found them in a state of perspiration and seemingly as exhausted and sluggish when he took them out for exercise, as if they had come off a long journey. The stable in which they were confined was ceiled above, and about 8 feet 6 inches in height, but had no ventilating ducts through which the impure air could find egress except a small opening in a pane of glass in each of two windows, which lighted the stable behind. I mentioned that the stable was not properly ventilated, and that there ought to have been no ceiling whatever above the horses, as the vitiated air
could not escape, and I recommended that as sleeping apartments were above the stable, and consequently ventiducts could not be made through the ceilings for carrying off the heated air, holes or openings should be made through the side wall, just under the ceiling, opposite the head of each horse, and a wooden box inserted in each opening six by eight inches square. On the outer end of that box I advised that a piece of perforated zinc should be fixed to prevent the access of birds or mice, and on the inside, flush with the wall, a sliding board, that he (the coachman) might open and shut at pleasure, and by this means, if tubes were inserted through the wall a little above the floor, in the manner I have pointed out, that fresh air could be admitted, I thought, with the addition of the opening in the windows, he might, notwithstanding the ceiling above, create a circulation of air, and thereby ventilate his stable, which is a small one; and, providing he was careful to remove the dung and urine once or twice every day, I thought he might find no difficulty in keeping his horses always in a sound and healthy state. Some months afterwards, I happened by chance to meet the same man, and he told me he had carried out my recommendation exactly as to the ventilation of his stable, and that he found the greatest possible difference in his horses. They were then taking their food, and getting into high condition, and when he took them out for exercise they were as playful and in as high spirits as he could wish. It is the very same with human beings, for if people live in the midst of filth, in houses, low, damp, and overcrowded, and the fresh and pure air is prevented from blowing the noxious and poisonous emanations from their dwellings, in vain may they long expect to avert the ravages of fever and other pestilential diseases. For example, if a man and his wife, occupying a small dwelling, sleep in a bed-room with the doors and windows closely shut, and where there is no fire-place, the room probably only ten or eleven feet square, and the ceiling say only seven or eight feet in height (and unfortunately, gentlemen, there are hundreds and thousands of family-bedrooms no larger, if indeed so large as this), they will in the morning rise the very reverse of being refreshed by sleep. Without doubt, they will
feel themselves (as hundreds have done before), almost as much exhausted as if each had been toiling for hours at some laborious employment, by having breathed over and over again the impure atmosphere confined in the room. If however, the outside as well as the inside of the dwelling is kept clean and tidy—and this of itself is of the deepest importance for the comfort and health of every family—and a little fresh air is allowed to get into the sleeping apartment, for instance behind the skirting board, or by any other simple means at a low level, and a small piece of the upper sash of the window is kept open, which ought to be observed in good weather, summer and winter, in small family bedrooms, that a gentle movement of air may take place, then the people sleeping in such small apartments will assuredly find their sleep not only sound but refreshing, and the whole system invigorated by this simple and easy mode of ventilation, which by many I have reason to know is never even thought of. It is stated by an eminent engineer, Mr. Tredgold, that four cubic feet of fresh air is necessary every minute for an adult. If this be the fact, we may easily conceive how injurious to the constitution it must be for people to sleep in such small bedrooms as I have described, closely shut up, for, supposing no supplies of fresh air to get into the apartment at night, these two people would at that rate consume or breathe in two hours all the pure air that would be confined in the room, and, during the remainder of the night, they would be breathing, over and over again, air already much deteriorated by the evolution of carbonic acid gas from the lungs, and therefore most deleterious to the constitution.

The Chairman said— I am sure you have listened with very great satisfaction, and I hope, also derived considerable instruction from the very excellent lecture just read by Mr. Ferguson upon this very important subject. There is no one who has been attentive to the subject, with which Mr. Ferguson is so conversant, but will be ready to confirm a great many of his remarks respecting the very close and confined air of houses. I understand, in some instances, the only access for air getting into farm buildings is through the chinks of the doors, which, at night,
are closed upon the inmates. Nay, even that very simple mode of access for air is sometimes entirely shut out by dung and straw being stuffed in to close the crevices, and so exclude the air from the stock, and making the house as unwholesome for the inmates as possible. I recollect, on one occasion, my attention being called to a farm where there was a great deal of disease amongst the horses; in fact, one horse died, and others were ill, but in this very stable every possible pains were taken to exclude the air these poor animals were dying for want of.

Mr. Dobson said—Mr. Ferguson’s plans are so simple that it is in the power of almost every farmer to adopt them at a moderate cost. The under ventilation, I think is perfect. It is a subject which I have been connected with for forty or fifty years. There is nothing which I, as an architect, have found so difficult as ventilation; and to ensure ventilation the first and most important difficulty is the prevention of draughts; because draughts, as we all know, are sometimes very injurious to the constitution, and many a one has lost his life by them. There was Major Anderson, of Newcastle, in a public meeting at Newcastle, sat with his back to an open window, and he never recovered; and I don’t see why animals may not feel as we do. We sometimes see animals stand with their backs to a stone wall, but they rather prefer a hedge through which the draught is diffused and subdued. Now though not an agriculturist, but knowing something of ventilation, I will call your attention to the subject of light. I think it is almost impossible to sit in an ill lighted room without feeling some degree of unhapiness. Now, animals are similarly affected. It is necessary to make animals happy if you can; and nothing contributes more to that than plenty of light, and since glass is so easily obtained, there is no reason why animals should not be supplied with plenty of light. I agree with Mr. Ferguson about ventilation; but I would also impress upon you the necessity of light, I don’t profess to be an agriculturist; but I have been employed for a good number of years now, in the erection of farm buildings. There are many farm buildings built by architects which are exceedingly ill ventilated; but we must appeal to the farmer for information. If I had to build farm
buildings I should go to Mr. Ferguson, or some other agriculturist, for information, and I merely introduce the subject of light that some person may give us some information upon the subject.

Mr. Lee intimated that there was a prevalent opinion that light was no advantage, and that the less there was of it the better; but Mr. Dobson and the Chairman gave expression to a decidedly different opinion.

The Chairman—Mr. Ferguson, in the discourse of his able essay, hinted at the idea—not a new one—of having the offices on the farm altogether under one roof, not having a roof over every cow house and separate place, but to have the whole under one roof in the same way, as you see the roof over a railway station. If that could be done at a moderate cost, it would save all other roofing whatever, and you would have no need of ventilation, because if you had a glass roof, it would be open and effect the purpose. Now, if you could produce a plan to effect the roofing of offices in that way, you would deserve the credit, praise, and thanks of all agriculturists, because nothing would conduce so much to the health of animals, and the security of property, as to have something with a free access of air at all points. Mr. Ferguson mentioned another thing which I was glad to hear, because it is what I have acted upon ever since I had anything to do with farm building in this country; but it was so much against the feelings of the farmers that it was a difficult thing to get them to do away with it—that is, to do away with hay lofts above their stables, which keeps together and returns the vitiated air upon the horses in a very unhealthy way, besides if hay is kept there long it becomes very much deteriorated in quality, for bad air is continually accumulated there. If, instead of having the hay loft overhead, there was a certain place in the stable or some place adjoining it for the hay, it would be a very great advantage indeed. But there is not one farmer in ten would be a convert to that.

There is another thing very desirable, and which would be inexpensive, that is, that there should not only be only water to wash out the dung and stalls of horses, to make them sweet
and clean, but that the horses should have access to water circulating round their mangers, with a place they could drink at. A great deal of injury is done to horses by keeping them a long time from water, and then allowing them the free use of it. We cannot regulate the water a person will drink: Sometimes when heated, or after much walking, I will drink a good deal—other days I will drink none at all. The same with animals. If they can have water of their own taking, they will take it when it is required, and in less quantities, and it will do them more good than if they are brought to the water at certain times, when they take more than they would do if they were always to take it when they like, and more perhaps than is good for them. The fact is, if horses had access to water at all times, they would never take a quantity to injure them.

Mr. Trotter, of Healey Mill, combatted the notion that the vitiated air from animals had a tendency to rise; he had always believed the contrary, and thought that such air, being composed principally of carbonic acid gas, would be considerably heavier than the surrounding atmosphere, and consequently fall.

The Chairman, Dr. Nicholson, and Mr. Dobson, pointed out that Mr. Trotter had overlooked the fact that the rarefaction of the air caused it to ascend, and that then the object should be to carry it off, and supply its place with pure air admitted from the bottom, rather than allow the vitiated air to accumulate above, and then, by its specific gravity, to descend and be breathed over again by the animals.

The Rev. J. Jaques—With the permission of the Chairman, I will relate an anecdote which I think will help to illustrate the subject we are now discussing. I refer to a story I remember to have read in a paper on ventilation, published some time ago, I believe in Chambers' Edinburgh Journal. I can't recollect the number in which the story appeared, and I may not perhaps be very accurate in the manner of relating it; but the facts embodied in it are so imprinted in my mind that I feel sure I cannot be mistaken with regard to them, and the company will see that they fully bear out the position of the lecturer as to the tendency of vitiated air to ascend. The circumstance is
A gentleman of property had a fancy to keep a number of monkeys, and, with a view to this object, had a large room constructed under his directions, something like a gentleman's drawing room, for their reception. In this apartment was placed a kind of frame-work of wood, reaching a considerable height, for the accommodation of these animals, and suited to their well-known habits of climbing. When all was ready, sixty monkeys were placed in this habitation, and regularly supplied with suitable food. All went on well for a time. But a month had not passed before it was observed that most of these creatures became sickly, lost their vivacity, and discontinued their tricks. This was remarked to be particularly the case with those which had at first appeared the strongest, the most lively, and the most masterful, and which always selected for themselves the highest parts of the frame-work. In short, within six weeks from the time of their admission into this abode, fifty out of the sixty of these creatures died; those being the first victims which were originally the strongest, and accustomed, as I have said, to take the loftiest places. Of course, on investigation, it was ascertained that the cause of this disastrous result was the want of ventilation—that the monkeys died, in fact, from the effects of a poisoned atmosphere. Accordingly, the survivors, which were found in a very sickly state, were removed to another apartment duly constructed with reference to this point, and the story goes on to say that these quickly recovered their health, and returned with their natural agility to their former habits. In the same paper is mentioned another striking circumstance in further illustration of this subject—but I do not exactly remember, whether this was related as an actual experiment, or only mentioned as a result sure to happen under the conditions described. I will take the latter supposition. It is stated then, and no doubt correctly, that if a person, on retiring to rest, should draw the curtains of his bed closely around him, and at the top of the bed, within those curtains, should suspend a cage with one or two canaries in it, he would find the poor birds dead in the morning—the victims, of course, of the poisonous gas from his own lungs. The reverend gentleman concluded
by observing that he had himself noticed the rising of carbonic acid gas in extensive breweries, though he admitted that this rising upwards was always in proportion to the quantity of heat evolved in the process of fermentation.

The Chairman—There is a continual evolution of gas in the air, and the practical illustrations afforded by Mr. Jaques to prove the ascent of the vitiated air, are certainly very striking ones. The very same thing occurred to me about the injurious effects of people sleeping in beds enclosed by curtains. It is very certain that if two people sleep in the same room without any aperture or fireplace to allow the impure air to escape, the effect will be that they will rise unrefreshed, and have a head-ache in the morning. I would go a little further than Mr. Ferguson. I would not only condemn all small rooms, but all bed hangings; because I am quite certain if two people inclose themselves within bed curtains, in the course of the night the air will be so much vitiated that it will become extremely detrimental to them; and the experiment mentioned by Mr. Jaques, of the bird hung up in the cage over the bed, proves how deleterious the air becomes within the enclosed curtains of a bed in a confined room in which two persons are sleeping. This shows two things—that the air is soon used up without the introduction of fresh air; and it shows, also, (what Mr. Trotter contests) that bad air rises up, because, if it does not, why should it kill the canary? It was found hovering round the top of the bed.

EXPERIMENTS IN FEEDING MILCH COWS.

Translated from the Journal D'agriculture Pratique,

BY CHARLES L. FLINT.

Though the question of feeding stock has been very ably treated by many scientific and practical men, who honor the pursuit of agriculture; it is still far from being completely settled. This journal published, some time since, a very interesting article by M. Moll, upon fermentation, and its effects on certain
kinds of fodder, especially straw. But all are not yet fully agreed in opinion as to its effects, or the point to which it ought to be carried, or the kind of products, which it is best to subject to it. It is proper, therefore, to submit to farmers some practical experiments, carefully conducted; that will, perhaps, serve as a guide for new experiments though stripped of some minute details, which might make them more mathematically exact.

In ordinary practice agricultural experiments have rarely united all the conditions of exactness, like an analysis in the laboratory; or even of an experiment made in an establishment specially devoted to these investigations. Experiments require much time, a skilful hand, expense of every kind, and a constant watchfulness; and then often fail.

In this point of view inquiring minds must regret the loss of the Agricultural Institute of Versailles,* which combined so well all the conditions, such as ability of experimenters, practical hands, time, money, laboratories &c., and which had begun in a way to give good hopes of its future success. For want of exact agricultural experiments, that is, such as satisfy absolutely all the requirements of weight, measure, analysis, animals, kinds of fodder, manures, soils, &c., we must be content with some experiments which I call practical, because, though being destitute of some of the positive data, which constitute the merit of exact experiments they have, nevertheless, for the inquirer, a character sufficiently convincing to guide and strengthen him in the way of progress.

In the investigations into the feeding of stock, it is evident that to make an experiment positively conclusive, it would be necessary to have an exact analysis of each kind of fodder employed; because in spite of the many substitutes,—by reason, even, of the number of these, and the difference between them,

*It will be recollected that three or four years ago—when Louis Napoleon was President of France, he sanctioned a bill by which the renowned palace of Versailles was devoted to the purposes of an agricultural Institute. He had scarcely embarked upon the full tide of successful experiment, when the Emperor wanted all the buildings and the beautiful grounds by which they are surrounded for the purposes for which they were originally designed, and the Institute was closed.
we must recollect that the experimenter must be embarrassed; knowing that the soil, the climate, the seasons, &c. may exercise a considerable influence upon the nutritive value of his hay, his roots, his green fodder, &c. The condition of machinery, and of labor, produces also some important modifications in the nutritive value of certain products, and the residuum of mills and manufactories,—bran, oil-cake, beet pulp, the residuum of distilleries, &c., must necessarily vary in their composition, and their relative value, as often, or nearly so, as the mode of manufacture and the system used varies. Thence result some sensible differences in the value of each aliment taken in different localities, and so in the results of experiments conducted with all possible good faith.

Still in the production of fat, or labor, the ordinary food of animals, has now a mean value, sufficiently well understood in spite of certain blanks in the estimates, and some differences of opinion upon the modes of preparation and application. In all cases, a given quantity of nutritive materials consumed in fattening animals, and working cattle, will produce some effect, and this effect will be more or less considerable and advantageous according to the state of these materials, and the preparations which they have undergone. This effect will not be the same if we apply the same quantity of nutritive material to the production of milk. It may happen that in stead of a positive result, we obtain only a negative one;—that is a diminution of milk, instead of an increase which we had expected in increasing the total nutritive value of the fodder.

This proposition, which the following experiments seem to support, has considerable importance to all engaged in the milking interest; and especially for milk men who furnish milk for the large cities; as well as for the manufacturers of beet sugar and the farmers in their neighborhood.

My experiments have been confined to wheat bran (shorts) on the one hand, and the residuum of the manufacture of beet sugar fermented to some extent, on the other. The pulp taken for the experiment came from white Silesian beets, after being twice pressed, and giving from six to eight and a half per cent.
of sugar. This pulp was kept during the winter covered with a thick layer of loam, which freed it from exposure to the air. It had got, notwithstanding, a certain degree of alcoholic fermentation, at the time it was removed from the bin; though after some hours (eight to ten according to the state of the atmosphere) of exposure to the air, the acid fermentation was produced with sufficient intensity to be perceptible to the smell. Our work, therefore, touches upon the question proposed by M. Moll; with this modification, that it applies here to a special case,—the production of milk. The experiments took place between the 18th of January, 1852, and the 28th of March following, at the Farm School of Martimoast, near Cherborg, and were skilfully directed by General du Moncel, who for more than thirty years has exercised a marked and happy influence on the agriculture of the Department of Manche.

Opinions are not fully agreed upon the influence of fodder upon milking qualities. M. Boussingault attributes to it, but only with regret and qualification, a certain influence upon the quality, but not so much upon the quantity of milk (the sum of nutritive equivalents being understood to be the same). M. M. Villeroy, Collot, and others attach considerable importance to the nature of the kinds of fodder and the mode of preparation; and M. Magne seems to accord a favorable influence to fermentation. New experiments, often repeated in different localities, will throw light on the question, and reconcile these different opinions.

In all cases, I think, the effects and relative value of the different aliments (and especially those fermented) must be very different, as applied to produce fat, work or milk. I believe, also, that the fermented aliments, especially if they approach even very slightly the acid fermentation, are noxious to the production, or rather to the secretion of milk; and that in this case it is possible that the sum of the equivalents, or the nutritive value of the fermented fodder has a negative influence, by reason of the quantity of fermented food used.

We give now the manner in which the experiments, of which we speak, were made; they confirmed my first opinions.
In order to avoid as far as possible the chances of errors, which might arise by taking single animals, I resolved to try a number of cows sufficient to meet any accident which might happen to any one. Six cows were taken for the beet pulp,* and ten for the bran, these substances being added to complete the allowance which the scarcity of dry fodder in 1851, made desirable. The main food was the same, during all the time of the experiments, and for all the cows. It was composed, first, of eight kilogrammes† of hay, and six of wheat straw, a part of which was consumed, and the rest used in litter. The allowance was varied only by the substances taken in the experiment. To facilitate the reading and understanding of these tables, I have suppressed unimportant details, such as the names of the cows, the length of time from calving of each cow, and the daily produce of each, and have thrown together all these data in a single sum total of the produce, and in one general average for the age of the milking, (time from calving) I shall designate each lot of cows by the letters A and B. This modification in the form does not effect the accuracy of the result.

Table 1.—Lot A.

| Cows fed on Beet Pulp—15 kilog. of pulp added to the ordinary dry food of each Cow. |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 262 litres‡ | 233 lit. | 29 lit. | 182 | 26 | 147 | 21 | 147 | 21 | 5 | 0 | 170 days. |

During this experiment, which lasted four weeks, the produce diminished 5 litres in 26—or about 20 per cent.; the average time from calving being 170 days.

* It will be seen below that Bossingault, Gaspain and others give this a nutritive value about equal to the beet itself, so that the relative result would be the same as if the beet simply or mangel wurtzel had been used; which is more commonly fed out to cattle in this country—Tr.

† A kilogramme is 2 lbs. 3 oz. 4 2-5 drachms avoirdupois or about 2 ½ lbs.

‡ A litre is equal to 1 ½ pints, or more strictly to 1.76 pints.
Table 2.—Lot B.
Cows fed on Wheat Bran, (shorts), 3 kilog. a head added to the ordinary dry rations.

<table>
<thead>
<tr>
<th>No. of Cows</th>
<th>Milk on 15th of February</th>
<th>Per day</th>
<th>From 16th to 20th of February</th>
<th>Per day</th>
<th>From 21st to 29th February</th>
<th>Per day</th>
<th>From 30th of February to 7th March</th>
<th>Per day</th>
<th>From 8th to 14th March</th>
<th>Per day</th>
<th>From 15th to 21st March</th>
<th>Per day</th>
<th>Per daily increase</th>
<th>Average length of time after calving.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>51</td>
<td>360.5</td>
<td>5.15</td>
<td>392</td>
<td>56</td>
<td>385</td>
<td>53</td>
<td>357</td>
<td>51</td>
<td>0</td>
<td>141 days</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

During this experiment, the milk, which had slightly increased at first, decreased to the point from which it started. The average time from calving was 141 days.

Table 3.—Lot A.
The Cows which were fed on Pulp, now fed on Bran. 3 kilog. of Bran are substituted for 15 kilog. of Pulp.

<table>
<thead>
<tr>
<th>No. of Cows</th>
<th>Milk on 15th of February</th>
<th>Per day</th>
<th>From 16th to 20th of February</th>
<th>Per day</th>
<th>From 21st to 29th February</th>
<th>Per day</th>
<th>From 30th of February to 7th March</th>
<th>Per day</th>
<th>Per daily increase</th>
<th>Average time from calving.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>21</td>
<td>140</td>
<td>20</td>
<td>150.5</td>
<td>21.5</td>
<td>173.5</td>
<td>25.5</td>
<td>171.5</td>
<td>24.5</td>
<td>173</td>
</tr>
</tbody>
</table>

In this experiment, which lasted six weeks, and the object of which was to control the results obtained in the first table (1), we see the cows whose milk was diminished on the pulp, increase again by 6 litres, (5 1/4 quarts) in 21, (or 28 per cent.,) by the simple effect of substituting 3 kilogrammes of bran for the 15 kil. of pulp; the time from calving was, besides, four weeks longer or 198 days. It should be added, that during this experiment, and that of Table 2, the bran was perceptibly inferior.

Table 4.
Cows fed on Green Cabbage Leaves. 17 kilog. of Cabbage Leaves were substituted for the 3 kilog. of Bran, which 3 of the Cows of Table 2 received.

<table>
<thead>
<tr>
<th>No. of Cows</th>
<th>Milk on 15th of February</th>
<th>Per day</th>
<th>From 16th to 20th of February</th>
<th>Per day</th>
<th>From 21st to 25th March</th>
<th>Per day</th>
<th>From 26th March to 1st April</th>
<th>Per day</th>
<th>Per daily increase</th>
<th>Average length from calving.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>14</td>
<td>94.5</td>
<td>13.5</td>
<td>101.5</td>
<td>14.5</td>
<td>105</td>
<td>15</td>
<td>115.5</td>
<td>16.5</td>
<td>105</td>
</tr>
</tbody>
</table>
During this experiment, which lasted six weeks, we find the milk at first rather increased, though the last week it diminished half a litre a day.

It would seem to result from the examination of the preceding tables:

1st. That the fermented aliments, the pulp of beet in particular, are not beneficial to milk cows, and cause the milk to decrease.

2nd. That wheat bran (shorts), at the rate of 3 kil., can be substituted with great advantage for 15 kil. of beet pulp to feed milk cows.

3d. Finally, that 17 kil. of cabbage leaves would equal 3 kil. of bran in nutritive qualities.

Shall we hesitate to say that no rule can yet be based upon our researches? They need to be repeated often, and in different conditions, to be admitted among the facts definitely established for practice.

The question relating to fermented fodder, is not settled; at least as to its value in feeding milk cows; and if the nutritive equivalents of many kinds of fodder and different aliments are nearly fixed, as of general application, there are doubtless some modifications to be made in these estimates, according to the kind of animal product for which they are designed. It is only in this point of view, and for the purpose of provoking new experiments on a subject so interesting, that I have determined to make known the experiments practically conducted, and in which many elements of study are wanting,—such as: comparison of different kinds of milk obtained (of little interest if the milk is to be sold as it is,) and an exact analysis of the substances used, especially the pulp.

As to the exact weight of the animals themselves, it matters not here, since the basis of the fodder was the same throughout; the established differences in the results cannot then be attributed to the influence of the different aliments used in the experiments.

But pulp has no well fixed equivalent. M. Boussingault fixes it at 303: M. de Gasparin believes it equal in nutritive value to the beet itself, which would place it nearly at the same
point: finally, *M. Magne* estimates it from 200 to 350 or about 300 mean. If we adopt this figure (300) as indicating the nutritive value of beet pulp, (hay having a value of 100;) our 15 kilogrammes of pulp had a value of about 5 kilogrammes of hay.

Wheat bran must necessarily present some marked differences in nutritive value, according to the perfection of the system of grinding employed. *M. Boussingault* estimates it from 50 to 85; *Block*, 105; *Magne*, from 60 to 150, &c. The mean would be about 90; and this we think we should adopt here; because the brand used came from the mill of General Du Moncel, where the work is executed with care and perfection. The three kilogrammes of bran used in our experiments had then a value of 3.33, of hay, about.

The cabbages are estimated according to scientific men and farmers as cited above, from 500 to 650: say 550, on the average: the 17 kilogrammes of cabbages used in our experiments had then a value a little less than 3 kilogrammes of hay.

In a word: Beet pulp fermented, though fed out in quantities of twice the nutritive value of bran and cabbages, produced a negative result; that is, a decrease of milk,—a result clearly shown by table 3; where we see the same cow which had lost milk with 15 kilogrammes of pulp, increase again their milk on 3 kilogrammes only of bran, instead of the pulp.

2nd. In estimating the bran at Martinvast, at 90 per cent. of hay, and the cabbages at 550, we approximate to the truth; since the two aliments used in the same amount of nutritive material, or nearly so, have produced perceptibly equal results, at least in the production of milk.

I am sure the results would have been different, if the substances used, had been applied with a view to fat. In this case, I believe the pulp would have taken the palm; not only over the cabbages, which is evident, but perhaps also over the bran. All the manufacturers of beet sugar, and many farmers, have learned the value of pulp in fattening cattle.

Finally, considered in an economical point of view, the question would be absolutely settled in favor of cabbages; the crop
of which may easily reach from 45,000 to 50,000 kilog (5 3-4 to 6 1-2 tons) per hectare (or 2 3-5 to 2 3-5 tons per acre). Pulp is worth only from one to one and a half francs the 100 kilogrammes; but cabbages are worth more than pulp for milk cows. Bran is worth from 10 to 11 francs the 100 kil.; this would raise to 30 or 33 per cent. the equivalent of food in cabbages, or the average; and estimating cabbages 1 fr. the 100 kil., the total value of the crop would of course be from 450 to 500 francs, at least; if we use it in feeding milk cows.

EXPERIMENT IN FEEDING.

BY JOHN BROOKS, OF PRINCETON, MASS.

Herewith, you have an account of some trials in feeding, which I have made at the time mentioned, with a view to determine the regular value of different kinds of food for producing milk, and the proportion of solid manure to the hay consumed.

December 17, 1851, commenced feeding two cows about 7 months after calving; the cows were gravid and expected to calve about March next, live weight 1600 lbs. one of them 44 and the other 31 months old. Each trial continued 5 days.

First 5 days fed on 2 per cent. of live weight,
    of hay cut daily - - 32 lbs.
    2 lbs. of Indian Meal, hay value, - - 8 "
    Hay value of daily food - - 40 "
    Hay value of 5 days food - - 200 lbs.
    Cost of 5 days food, hay at ½ cent per lb. $1.00
    Milk in 5 days - - 61.875 lbs.

    Cost of milk, (hay at ½ cent a lb.) 1.6 cents to the lb., or 3.2 cents the wine quart.

SECOND TRIAL.

Fed 5 days on 2½ per cent. of live weight of cut hay.
Cut hay daily - - - 40 lbs.
Cut hay in 5 days - - - 200 lbs.
Cost of 5 days food, hay at ½ cent per lb. $1.00
Milk in 5 days - - - 60 lbs.
Cost of milk, (hay at ½ per lb,) 1.6 cents the lb., or 3.3 cents the wine quart.
These trials show that 2 lbs. of Indian meal are very nearly equal to \( \frac{1}{4} \) per cent. of live weight of hay, or that one pound of meal is equal, nearly, to 4 lbs. of good English hay.

**THIRD TRIAL.**

Fed 5 days on cut hay 16 lbs.
32 lbs. oat straw, hay value - - 16 lbs.
2 lbs. Indian meal, hay value - - 8 lbs.
Hay value of food daily - - 40 lbs.
Hay value of 5 days food - - 200 lb.
Cost of 5 days food, hay at \( \frac{1}{4} \) cent per lb. $1.00
Deduct 5 lbs hay and straw not consumed \( 2\frac{1}{2} \)

\( \text{Total Cost: } $0.97\frac{1}{2} \)

Milk in 5 days, 50 lbs.

Cost of milk, hay at \( \frac{1}{4} \) cent a pound, 1.99 cents the lb., or 3.9 cents the wine quart. The hay and straw cut, given wet; the meal sifted over the hay and straw. This trial seems to show that 2 lbs. of oat straw is not equal for milk to 1 lb. of hay.

**FOURTH TRIAL.**

Fed 5 days on cut hay daily - - 16 lbs.
Oat straw cut, 32 lbs. hay value, - - 16 lbs.
2 lbs. Indian meal, hay value, - - 8
Hay value of 5 days food, - - 200
Deduct 6 lbs. not consumed - - 6

\( \text{Total Cost: } $0.97 \)

Milk in 5 days, 48 6-16 lbs.

Cost of milk, hay at \( \frac{1}{4} \) cent per lb., 1.9 cents per lb., or 3.9 cents the wine quart. The hay, straw and meal were given dry. The trial shows that hay, straw and meal is not so good for milk as when wet.

February 3, 1852, commenced feeding two cows one 33 months old, 14 days after calving, live weight 1000 lbs. The other 31 months old, 7 months after calving, not now in calf, live weight 690 lbs. These cows were fed 5 days on 42 lbs., or \( 2\frac{1}{2} \) per cent. of their live weight of uncut hay and 50 lbs. of flat turnips daily.
Uncut hay daily,                  42 lbs.  
Turnips, 50 lbs., hay value,       10 lbs. 

<table>
<thead>
<tr>
<th>Hay value of 5 days food</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of 5 days food, hay at ½ cent per lb.</td>
<td>$1.30</td>
</tr>
</tbody>
</table>

Milk in 5 days, 153.6 lbs.  
Cost of milk, hay at ½ cent per lb., .84 of a cent. the lb., or 1.6 cents the wine quart.

**SECOND TRIAL.**

| Fed five days on cut hay. | Cut hay daily | Turnips 50 lbs., hay value | 42 lbs.  
|--------------------------|---------------|----------------------------|--------|
| Hay value of 5 days food | 52            | Deduct 5 lbs. not consumed | 260    
| Cost of 5 days food, hay at ½ cent per lb. | $1.27.5 |

Milk in 5 days, 152.2 lbs.  
Cost of milk, .837 of cent per lb. or 1.6 cents the wine quart.  
The cows did not eat the hay quite so well as the long hay on the first trial, so that the whole experiment shows a small difference in favor of cut hay.

**THIRD TRIAL.**

| Fed same as second trial except gave 3 lbs. of Indian meal instead of 50 lbs. of turnips. | Cut hay daily | 3 lbs. Indian meal daily, hay value | 42 lbs.  
|------------------------------------------------------------------------------------------|---------------|------------------------------------|--------|
| Hay value 5 days food | 54            | Deduct 10 lbs. hay not consumed | 270    
| Cost of 5 days food, hay at ½ cent per lb. | $1.30 |

Milk in 5 days, 153 lbs.  
Cost of milk, hay at ½ cent per lb., 0.849 of a cent per lb. or 1.6 cent the wine quart. This trial seems to prove that 3 lbs. of Indian meal is equal to 12 lbs. of English hay or 50 lbs. of flat turnips, for milk.
FOURTH TRIAL.

Fed cut hay daily ........................................ 42 lbs.
33 lbs. carrots daily, hay value ...................... 11

Hay value 5 days food ...................................... 265
Deduct 5 lbs. of hay not consumed ...................... 5

Cost of 5 days food, hay 1/2 cent per lb. .......... $1.30

Milk in 5 days, 150.5 lbs.
Cost of milk, hay at 1/2 cent per lb., 0.863 of a cent per lb. or 1.7 cents the wine quart. This trial shows that 33 lbs. of carrots are not quite equal for milk to 50 lbs. flat turnips or 3 lbs of Indian meal. The cows in all the trials had free access to water.

December 10, 1851, commenced feeding 1 cow, 72 months old, one ditto, 96 months old, one ditto, 48 months old, 5 heifers 32 months old, 7 heifers 22 months old, 4 calves 9 months old, and 4 calves 8 months old. These cattle weighed live weight, 14,567 lbs., and were fed 5 days on 277 lbs. of cut hay daily, and drank daily 887 lbs. of water, dropped daily 668 lbs., of solid manure, or 2.44 lbs. of manure for one lb. of hay consumed.

Second trial commenced December 16, 1851. Fed same cattle five days on 352 lbs. hay daily, solid manure dropped daily 860 lbs., or 2.44 lbs. for one lb. of hay consumed; drank daily 868 lbs. of water.

February 28, commenced feeding one cow 72 months old, one ditto, 96 months old, and one 48 months old, 3 heifers 32 months old, and 6 heifers 22 months old. The live weight of these cattle was 9472 lbs.; they were fed 5 days, 240 lbs. cut hay daily; solid manure dropped daily 594 lbs., or 2.47 lbs. of manure for one lb. of hay consumed. Drank daily 542 lbs. water.

Hay consumed in the three trials, ............... 869 lbs.
Manure dropped " " " 2122 "

The proportion of manure to hay is as 2.44 lbs. of manure to one lb. of hay; the manure weighed 50 lbs. the cubic foot.
Manure after remaining under my barn one year weighed 44 lbs. the cubic foot, a loss of 6 lbs. in one year, or 12 per cent. of its weight when recently dropped. John Brooks.

COMPARATIVE PRODUCTIVE ECONOMY OF THE UNITED STATES.

BY CHARLES C. COFFIN, WEST BOSCAWEN, N. H.

An understanding of the laws which regulate the wealth of nations, is necessary for national prosperity. That those laws are not understood, is evident from the returns of the seventh census. Those returns exhibit some unlooked for, and remarkable results. Yet we were not prepared for such discrepancies in like productions from different localities.

That there are other reasons than a want of knowledge of nature's laws is also evident. In such a country as the United States, to which immigration is setting like a ceaseless tide, the laws of nature will, as a matter of course, be violated. The German brings the experience which he has had upon the fields of his father-land; the Irishman farms as upon the bogs of the Emerald Isle; the Norwegian, as upon the steeps of his nativity—all unfitted, as is each system to the soil and climate of their adopted home. Each has his own prejudices and customs, venerating them in the highest degree, and unwilling to yield to the imperative demands of nature.

Hence those States, which are in their infancy, cannot be taken as correct data.

The sources of the nation's wealth are so various, that it requires large scope of vision to comprehend them. A country embracing such an extent of territory, with variations of climate, thermal and hydrometric, such a variety of geological formation, and combinations,—embracing all the precious and useful metals; such an extent of sea-coast and numberless rivers; presents considerations to the economist, which are not to be found in any other on the globe.

National prosperity is subject to three pursuits;—commer-
cial, mechanical and agricultural; — the latter is at the basis of all. Of agriculture we propose to speak; but as some states are extensively engaged in manufactures, and others in commerce, allowances should be made in the comparative results.

It is a natural supposition that a State possessing equal advantages with another State, should be equal in its like productions. Such is not the fact, as will be apparent from the annexed tables. Taking the article of butter,— a product universal the world over, and which can be produced in any clime, we see the following results. The States being arranged in progressive order.

<table>
<thead>
<tr>
<th>Lbs. per Cow, per annum</th>
<th>Lbs. per Cow per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>Maryland</td>
</tr>
<tr>
<td>Texas</td>
<td>Indiana</td>
</tr>
<tr>
<td>Georgia</td>
<td>Iowa</td>
</tr>
<tr>
<td>South Carolina</td>
<td>Delaware</td>
</tr>
<tr>
<td>North Carolina</td>
<td>Wisconsin</td>
</tr>
<tr>
<td>Alabama</td>
<td>Massachusetts</td>
</tr>
<tr>
<td>Arkansas</td>
<td>Ohio</td>
</tr>
<tr>
<td>Mississippi</td>
<td>Maine</td>
</tr>
<tr>
<td>Tennessee</td>
<td>Michigan</td>
</tr>
<tr>
<td>Missouri</td>
<td>New Hampshire</td>
</tr>
<tr>
<td>Virgin</td>
<td>Connecticut</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>Pennsylvania</td>
</tr>
<tr>
<td>Kentucky</td>
<td>New Jersey</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Vermont</td>
</tr>
<tr>
<td>Illinois</td>
<td>New York</td>
</tr>
</tbody>
</table>

In many of the States large quantities of milk are sold; but if the above table is examined, it will be seen that most of those States which produce the largest amount of butter, sell the most milk. Vermont is an exception. But the exception will be accounted for in the quantity of cheese produced.

The purely agricultural States of the West, with broad prairies, fertile fields, and favorable climate are behind the bleak and barren States of Vermont, New Hampshire and Maine. New York stands highest on the list, yet she sells millions of gallons of milk per annum.

The reasons for such discrepancy must be beyond climate or soil. They are to be found in inferior stock, and improper management.

In the article of cheese* there is a wider difference.

* It is well known that cheese is not an article of food so universal in its use as butter; yet from such data, it would seem that many of the States were dependent upon others for this article of food, which with judicious arrangements can be produced in all climates.
Louisiana     .01     Indiana     2.25
South Carolina .02     Illinois     4.00
Maryland       .04     Iowa       4.00
Missouri       .09     Tennessee     4.72
Alabama        .13     Wisconsin     6.00
Georgia        .14     Mississippi    10
Delaware       .16     Rhode Island    11
Florida        .24     Maine       18
Arkansas       .32     New Jersey    30
Texas          .40     New Hampshire  31
North Carolina .43     Ohio        36
Tennessee      .70     New York     53
Kentucky       .89     Massachusetts  54
Missouri       .89     Vermont      59
Virginia       1.37    Connecticut  62

The State of Vermont produces more pounds of cheese, than all the rest of the Union, with the exception of New York, Ohio, Maine, Connecticut, Massachusetts and New Hampshire; and this from 146,128 cows.

It may reasonably be asked if there is aught in the geological formation, geographical position, or climate of Vermont, to account for the successful prosecution of such a branch of agriculture; which may not be equally successful in other States? We answer no. New York and Ohio, New Hampshire and Connecticut show the same capability.

But if we look at the number of cows per individual, surprise at the discrepancy will be still greater. We shall see that some of the States, which produce the least butter and cheese per cow, keep the greatest number of cows per individual.

<table>
<thead>
<tr>
<th>Cows per individual</th>
<th>Cows per individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine               .22     Alabama     .29</td>
<td></td>
</tr>
<tr>
<td>New Hampshire       .29     Florida     .83</td>
<td></td>
</tr>
<tr>
<td>Vermont             .46     Mississippi  .35</td>
<td></td>
</tr>
<tr>
<td>Massachusetts       .13     Louisiana    .20</td>
<td></td>
</tr>
<tr>
<td>Rhode Island        .13     Texas       1.01</td>
<td></td>
</tr>
<tr>
<td>Connecticut         .23     Kentucky    2.25</td>
<td></td>
</tr>
<tr>
<td>New York            .30     Tennessee    .24</td>
<td></td>
</tr>
<tr>
<td>New Jersey          .24     Arkansas     .44</td>
<td></td>
</tr>
<tr>
<td>Tennessee           .22     Missouri     .33</td>
<td></td>
</tr>
<tr>
<td>Delaware            .21     Ohio        .27</td>
<td></td>
</tr>
<tr>
<td>Maryland            .14     Indiana     2.28</td>
<td></td>
</tr>
<tr>
<td>Virginia            .22     Illinois     .34</td>
<td></td>
</tr>
<tr>
<td>North Carolina      .25     Mississippi  2.25</td>
<td></td>
</tr>
<tr>
<td>South Carolina      .28     Iowa        .34</td>
<td></td>
</tr>
<tr>
<td>Georgia             .36     Wisconsin     .21</td>
<td></td>
</tr>
</tbody>
</table>

Vermont is a purely agricultural State. The dairy is a branch of business natural to the State. It is made profitable by indus-
try and energy. Each individual is possessed of one forty-six hundredths of a cow, each cow producing 59 lbs. of cheese and 83 lbs. of butter.

In the State of Florida, each individual owns eighty-three hundredths of a cow. Each cow producing 24 lbs. of cheese and 5 lbs. of butter.

Now for what purpose do the agriculturists of the south rear such stock? Surely not for profit.

The total lbs. of cheese produced in the United States in 1850, was 105,535,219 or about 4½ lbs. to each individual. The export for the year was 10,361,189, leaving about 4 lbs. per individual for consumption. Now if the consumption is equal in all the States, there are but seven States that produce their own cheese—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York and Ohio. Pennsylvania, with a population of 2,311,786, produces but 2,505,034 lbs. of cheese. If each individual consumes 4 lbs., there is a deficit of 5,742,110 lbs., which at 10 cts., amounts to more than half a million dollars. And this, with a soil and climate equally advantageous with New York or Ohio. Indiana with a population of 988,416, produces from 284,554 cows, but 624,564 lbs. of cheese and 12,881,535 lbs. of butter.

This is a result where soil and climate are greatly in favor of the former States. Neither of the States sell milk, and it is reasonable to suppose that the proportionable consumption of milk, as an article of food, is as great in one as the other. Hence the discrepancy must be sought for in the stock, or in the management of the dairy, or in both. There is no reason to suppose that Indiana may not be made to equal Vermont, but on the contrary, excel it in dairy products.

The discrepancy which exists between the States of Vermont and Indiana is illustrative of that of the whole Union, not only in cheese, but in various other articles.

The amount of wool produced per sheep, shows results which must be attributed to stock and management.

In the table appended there is evidently an error in the computation for Massachusetts; for it can hardly be supposed that
that State should range so far ahead of all others,—especially of Vermont, where wool-growing is a profession.

<table>
<thead>
<tr>
<th>State</th>
<th>Lbs. of wool per sheep</th>
<th>State</th>
<th>Lbs. of wool per sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>3.02</td>
<td>Florida</td>
<td>0.99</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>2.90</td>
<td>Missisippi</td>
<td>1.8</td>
</tr>
<tr>
<td>Vermont</td>
<td>3.35</td>
<td>Louisiana</td>
<td>0.9</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>4.53</td>
<td>Texas</td>
<td>1.3</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>2.9</td>
<td>Kentucky</td>
<td>2.0</td>
</tr>
<tr>
<td>Connecticut</td>
<td>2.9</td>
<td>Tennessee</td>
<td>1.6</td>
</tr>
<tr>
<td>New York</td>
<td>2.9</td>
<td>Alabama</td>
<td>2.0</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2.9</td>
<td>Missouri</td>
<td>2.1</td>
</tr>
<tr>
<td>Tennessee</td>
<td>1.3</td>
<td>Ohio</td>
<td>2.5</td>
</tr>
<tr>
<td>Delaware</td>
<td>2.1</td>
<td>Indiana</td>
<td>2.3</td>
</tr>
<tr>
<td>Maryland</td>
<td>2.6</td>
<td>Illinois</td>
<td>2.4</td>
</tr>
<tr>
<td>Virginia</td>
<td>2.1</td>
<td>Michigan</td>
<td>2.7</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1.6</td>
<td>Iowa</td>
<td>2.4</td>
</tr>
<tr>
<td>South Carolina</td>
<td>1.7</td>
<td>Wisconsin</td>
<td>2.0</td>
</tr>
<tr>
<td>Georgia</td>
<td>1.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vermont, with a climate of long winters, stands first on the list, probably as to quantity per sheep, and quality. No State has given so much attention to wool growing, and within the last ten years she has produced a stock not surpassed in the country.

If Vermont has done thus, why may not Ohio, Pennsylvania, Kentucky and other States with climate to assist, surpass Vermont?

It has been computed that each individual requires seven lbs. of wool per annum, therefore the country requires not far from 166,000,000 lbs. per annum. The lbs. produced in 1850, were 52,789,174 from 21,721,814 sheep, or 2.44 lbs. per sheep. Showing a deficit of more than 100,000,000 lbs. Now if the lbs. per sheep were raised to that of Vermont, it would increase the amount to 72,000,000; and if the quality, which may now be rated at 0.40 per lb., were increased to that of Vermont, which may be called $0.50; it would give an increase of 15,000,000.

It is a well known fact, that it costs no more to keep a good animal than a poor one; here then would be actual gain of fifteen millions of dollars to the country per annum. This applies with equal force, to all the products of the country which are not in any great degree affected by climate.

The deficit of 100,000,000 lbs. of wool per annum,—in value $10,000,000, is worthy of the consideration of the agriculturists
of the country. But the discussion of the subject cannot be pur-
sued. It has been theorized by economists, but it is a problem
which will settle itself.

Yet to arrive at national wealth, it is absolutely necessary to
understand the laws of production and distribution. It is only
by comparative analysis that a State can understand its progress.

There is a legitimate business for every community. It is
not a haphazard course which a community can pursue success-
fully for a long period. Prosperity is founded upon rational
laws,—laws of nature, or of circumstances. Some of the States
must of necessity be manufacturing, others commercial, others
agricultural, and others, combining different employments.

It is impossible with the space at command, to do more than
to glance at the industry of the country. But perhaps enough
has been said to call attention to the comparative economy of
the different States. No State can float serenely on the tide of
time to a great and glorious destiny. The great moving powers
are industry and energy; making use of the best means which
nature or circumstances has given.

---

A CHAPTER ON SEA WEED.

BY REV. WILLIAM CLIFT, STONINGTON, CONN.

"The floor is of sand, like the mountain drift,
And their frail shells spangle the flinty snow;
From coral rocks the sea-plants lift
Their boughs, where the tides and billows flow;
And the water is calm and still below,
For the wind and the waves are absent there,
And the sands are bright as the stars that glow
In the motionless fields of upper air;
There, with its waving blade of green,
The sea flag streams through the silent water,
And the crimson leaf of the dulse is seen
To blush like a banner bathed in slaughter.
Where with light and easy motion,
The fan-coral sweeps through the clear, deep sea,
And the yellow and scarlet tufts of ocean
Are bending like corn on the upland lee."—PERCIVAL.

Winter has come, the season of howling storms, of high winds,
and high tides; when the wide spread prairies of the sea are
mown, and the rich harvest fields of old Neptune are gathered in grandeur to the shore. On what a magnificent scale doth the trident lord conduct his harvest work. How do McCormick reapers sink into insignificance, in comparison, when his tempest driven waves sweep the green fields of the deep, and roll in their precious products for leagues along! No harvest scene of the golden West, grand as it is, can equal this. Look out upon the foaming sea, where your vision takes in half the horizon of water, and behold every white cap fringed with green,—every breaker as it thunders upon the beaten-sand, bearing its heavy freight of tangled herbage. No tame day's work of twenty acres is here; but a whole bay of twenty miles diameter is harvested in a single storm, and the product heaped in an unbroken wind-row, upon the shore!

Now, gentlemen of the farm, hasten with all your men and teams and gather the spoils, which Nature has thrown so bounteously at your feet; do not wait for the morrow, and dry roads; but while the last rack of storm is in the sky, yoke the teams, and rush for the beach. Hasten, or a neighbor, more enterprising, and who appreciates the value of this vegetable deposit, will appropriate it all. It may be that it costs time, and money, and labor, to gather it, but they are all well spent in hauling this manure, though you carry it miles back from the shore.

The recent death of our great New England Statesman has led to the publication of almost every thing that pertained to his public and private history. Nothing, of all that has been published, is more interesting than his life at his farm at Marshfield. Our attention was particularly arrested by the value put on kelp, and sea-weed by Mr. Webster, * hence this chapter on sea-weed,

The estimate of the value of sea-weed is very high; yet we are assured that Mr. Webster regarded this as an under-estimate. The common estimate of its value is certainly much lower than this varying from nothing, to half the value of farm yard dung. We know of farmers who profess to have tried it, that now discard it; because it introduces the seeds of beach grass into their

* See (Boston) Journal of Agriculture for Dec. 1852, p 168.
fields,—an article that they find useless for fodder, and very difficult to eradicate. Others say that they have tried it in their cattle yards and pig sties, and that there is nothing of it left, after a few weeks. They would as soon have so much fog, or moonshine, to make manure of. Here is quite a difference between farmer Webster and practical farmers; and who shall decide when farmers disagree. There seems to be no motive for any one to misrepresent Mr. Webster's opinion. Is Mr. Webster's opinion as good in such a case, as in one of constitutional law? or is he to be set down as a Sciolist in agriculture,—an average of that reputable class known as gentlemen farmers?

The matter is one of great importance to the agricultural community, and will pay us for a thorough examination. With such helps as we have had at hand, we have looked at it, and here, gentle reader, are our spectacles. Look for yourself.

In the first place, the pasture ground on which these weeds feed, are worthy of notice. They grow in great luxuriance in rivers where the tide runs; and about their mouths; in the bays and creeks along the shore. This is especially true of the eel grass, which grows in greatest abundance along the coast of New England. Square leagues of it may be found in all our shoal waters. These lands are, for the most part made up of vegetable deposite, brought down in the currents of the brooks and rivers, from their remote sources in the mountains and highlands. The leaves of the forest, and the fine vegetable moulds along the banks of the rivers, are broken off in the current, and find their way into the water. These rivers find their way into larger bays, their bottoms are often covered, to a depth of many yards in some places, with this black, virgin mould. The richest portion of New England has thus been swept off by her rivers, and now lies under water, or is just emerging from it, in the salt marshes along the shore. No bottom land, or prairie of the West is richer than this deposit. If it could be raised above water it would yield crops to rival any in the world. The Dutch understood the value of this article; and, by their system of dykes and drainage, have reclaimed a large territory from the domain of the sea.
Now, with such a luxuriant soil for these weeds to grow in,—a soil unsurpassed in the elements of fertility,—ought we not to look for more fertilizing properties in their composition than are to be found in land plants? Whether they derive their sustenance from the roots, or absorb it from the water, surcharged with these moulds, we should expect to find them rich in fertilizing matters.

The use of this article as a manure has long been known; it is worth while to look at the views of the old writers upon this subject. In Deane's *Georgical Dictionary or New England Farmer*, published at Worcester, 1790, there is an article on Ore-weed, Sea-weed, &c., which contains information that would be of great service to all modern farmers who live by the sea. He says:

"The sorts are chiefly three; the kali, or rock weed; which is allowed to be of the greatest value for manure. The *alga*, called eel grass, or grass-wreck, is of the next rank, as to its richness. But there is another sort, consisting of a broad leaf with a long shank, or stem, of an inch diameter, by some ignorantly called *kelp*. . . . A great advantage which the sea-weeds have above other plants, is their speedy fermentation and putrefaction. The farmer has no need to wait long after he has got them, before he applies them to the soil. The rock-weed may be ploughed into the soil as it is taken from the sea. This is practised in those parts of Scotland which lie nearest the seashore, by which they obtain excellent crops of barley, without impoverishing the soil. Neither have they any occasion for following to recruit it. In hills of potatoes it answers nearly as well as barn-dung.

"Farmers who are situated near the sea-shore have a vast advantage for manuring their land. If they were once persuaded to make a spirited improvement, they might enrich their farms to almost any degree that they please. They should visit the shores after spring tides and violent storms; and, with pitch forks, take the weeds, and lay them in heaps a little higher up; which will at once prevent their growing weaker, and secure them from being carried away by the next tide. Many are so
situated, that they can drive their carts, on a sandy beach at low water, to the rocks, and fill them with weeds. Can they be so stupid as to neglect doing it? It is even worth while to go miles after it, with boats, when it cannot be obtained more easily. This manure is represented in the Complete Farmer, to be twice as valuable as dung, if cut from the rocks at low water mark; and that fruit trees which have been barren, are rendered fruitful by laying this manure about the roots."

Says Cuthbert W. Johnson, in his work on Fertilizers, p. 351: "Sea-weed has been analyzed by M. Gaultier de Claubry, in the fucus saccharinus and the fucus digitatus, which is much used in Scotland, as a manure, there are found the following substances.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saccharine matter</td>
<td></td>
</tr>
<tr>
<td>Mucilage</td>
<td></td>
</tr>
<tr>
<td>Vegetable Albumen</td>
<td></td>
</tr>
<tr>
<td>Oxalate of Potash</td>
<td></td>
</tr>
<tr>
<td>Sulphate of Potash</td>
<td></td>
</tr>
<tr>
<td>Sulphate of Soda</td>
<td></td>
</tr>
<tr>
<td>Sulphate of Magnesia</td>
<td></td>
</tr>
<tr>
<td>Muriate of Soda</td>
<td></td>
</tr>
<tr>
<td>Muriate of Potash</td>
<td></td>
</tr>
<tr>
<td>Muriate of Magnesia</td>
<td></td>
</tr>
<tr>
<td>Carbonate of Potash</td>
<td></td>
</tr>
<tr>
<td>Carbonate of Soda</td>
<td></td>
</tr>
<tr>
<td>Hydriodate of Potash</td>
<td></td>
</tr>
<tr>
<td>Silica</td>
<td></td>
</tr>
<tr>
<td>Phosphate of Lime</td>
<td></td>
</tr>
<tr>
<td>Phosphate of Magnesia</td>
<td></td>
</tr>
<tr>
<td>Oxide of Iron</td>
<td></td>
</tr>
<tr>
<td>Oxalate of Lime</td>
<td></td>
</tr>
</tbody>
</table>

"By burning these weeds together the kelp and barilla of commerce are formed, both of which are used as manures. The Suffolk and the Kentish farmers, however, as well as some of the Scotch, employ the sea-weed in its freshest state; either ploughing it into the soil, or spreading it on the top of their heaps of compost. The first plan, I have ever seen productive of the best effects, and in that conclusion I am supported by the experience of many practical farmers.

"The salt tuft of the sea-shore has been long used in many parts of England, as an excellent manure, especially for potatoes; and, according to Dr. Holland, even the salt mud of the Mersey is extensively used for the same crop, at the rate of twenty tons to the acre. The ground thus manured not only gives a large produce of potatoes, but is in a state of excellent preparation for the succeeding crop of either wheat or barley. The adoption of this practice has increased very greatly the value of the land about Weston. . . There can be no doubt of the advantage of using the sea-weed, or sea-turf in the freshest pos-
sible state, after it has been covered with the salt water; as by a spring tide; for if the salt water has been suffered to drain away from the weeds, and a partial decomposition has taken place, their value as a manure must be materially diminished as to value. . . . The Jersey and Guernsey Agricultural Society, in 1797, in their report to the English Board of Agriculture, say, 'A half a bushel of varech strewed over a rod of ground in winter, or the beginning of spring, will be a sufficient manure. Our laborers are unanimously of the opinion, that it gives a fuller ear to the corn, and prevents its being laid. Those who have any varech to sell, may at any time get a half bushel of wheat for six bushels of varech.'

To these we may add the testimony of J. F. W. Johnston, in his *Agricultural Chemistry.* He says:

"The marine plants, of which sea weed consists, differ from the green vegetable grown upon the land, by the greater rapidity with which they undergo decay. When laid as a top dressing upon the land, they melt down, as it were, and in a short time almost entirely disappear. This rapid decay is owing very much, to the peculiar nature of the organic matter they contain. This organic matter consists, chiefly, of a peculiar mucilaginous substance, which quickly falls away. But it is also rich in compounds of nitrogen, by which the decay of the whole plant is very rapidly promoted.

The dry plant is thus much richer in nitrogen, than any of our green crops, grown upon land; and therefore not only decays more rapidly, but is fitted to supply nitrogen to the plants more abundantly, and therefore more rapidly to promote its growth.

The sea-weeds also differ from land plants, by the greater proportion of ash, which they contain. The cultivated grasses give only from five to ten per cent. of ash. The *fucus vesiculosus,* leaves from fifteen to twenty per cent. of ash. Green sea-weed, therefore, imparts to the soil upwards of twice as much inorganic matter as an equal weight of almost any other green manure.

In the Western Isles one cart load of farm yard dung is considered equal in immediate effect— upon the first crop, that is—
to two and a half of fresh sea-weed, or to one and three quarters after the weed has stood two months in a heap."

Upon this estimate of the Islanders, it may be remarked, that the sea-weed is the chief manure their lands have, and would not show such comparative results, as lands not habitually dressed with this article. From the fact, that they prefer it decomposed, it is also evident that they do not understand the best method of using it; and it is quite probable, that their opinion is based upon no accurate experiment. One experiment is upon record as far back as 1819; which shows better results. Dr. Brown of Gorestone in Suffolk,—says that, "A violent gale in October, drove to this part of the coast, an unprecedented quantity of sea-weeds. I collected twenty seven cart loads; each as much as four horses could draw,—and spread it fresh, and wet, upon little more than an acre of bean stubbles, instantly plowed it in, and dibbled wheat upon it, October 16th. I then salted the adjoining land, with three bushels of salt per acre, and manured with fifteen loads of farm yard dung per acre, and sowed, November 15th.—The result was, that the sea-weeded portion gave three times the produce of any equal part of the field." This experiment shows a very decided advantage of the sea-weed over farm yard manure. But it is not sufficiently accurate to determine their relative value.

In the table of the comparative value of manures, as deduced from analyses by Payen and Boussingault, the *fucus saccharinus*, in its wet state, was estimated to have as much nitrogenous matter in twenty-nine pounds, as in one hundred of farm yard dung. The *fucus digitatus* had the same quantity in forty six pounds. This is an imperfect test of the value of manures; for experiment has pretty well established the fact, that other fertilizers are quite as important as nitrogen.

J. F. W. Johnston in his *Agricultural Chemistry*, intimates that the knowledge of the constituents of the sea-weed is yet very imperfect. But he gives an analysis of eleven different varieties; and the average of the whole. The mean approximate of the eleven, gives in one hundred parts of the ash:
Potash,                17.50
Soda,                12.70
Lime,                7.39
Magnesia,            9.89
Chloride of sodium,  16.56
Chloride of potassium,  0.93
Iodide of Sodium,  0.95
Phosphate of Lime,    7.24
Oxide of Iron,         0.21
Sulphuric Acid,      24.76
Silica,               1.81

This table is accurate enough for practical purposes, and perhaps gives us the best idea of the value of the miscellaneous weeds, thrown upon our own shores, that we can obtain short of an analysis, by some competent chemist. It will be seen, at a glance, that nearly a sixth part of the ash is potash; a third, chlorine and soda; and a fourth, sulphuric acid. The phosphate of lime, (which enters so largely into the grains,) is also in considerable quantity. Compare this analysis, with that of the beet, carrot, parsnip, and turnip; and you will see at once, that it must be a valuable manure for the root crops. The analysis shows the secret of its efficiency, as a manure for potatoes and turnips, and for fruit trees. Nothing that grows upon the farm, but will be benefitted by this manure.

Now what is especially wanted, to give the farming community a correct idea of the value of this article, is a series of careful experiments, under the direction of the County and State Agricultural Societies. And as Rhode Island has more soil washed by the sea, in proportion to the extent of her territory than any other State, it is meet, that her State Agricultural Society should take this matter in hand. And we venture to suggest to that honorable body the propriety of offering suitable premiums, in 1854, to determine this question. As the common eel grass, the rock weed, and the broad long leaf (known as kelp) are the most abundant, we want experiments to determine their relative value; as well as the value of the three combined, compared with farm-yard dung. Any intelligent farmer is competent to undertake the experiments, and if premiums were offered, they would without much doubt be accomplished. We also want experiments show-
ing the effects of sea-weed upon the different crops,—the cereals, potatoes, turnips, carrots, &c. The details of these experiments need to be carefully arranged by the officers of the Society; and the premiums should be ample, so as to induce a large number of experiments, and spirited competition.

The Agricultural Societies in the Shore Counties from Maine to Texas should, also, undertake these experiments. If the next two years could settle it as a fact, that sea-weed, applied to the soil in its fresh state, is as valuable, or more so, than farm yard dung; it would work a great change in our farming operations; and add millions annually to the national wealth.

There is a large quantity of sea-weed used by our farmers; but a much greater quantity is suffered to waste upon the shores. It is so highly charged with nitrogen that it rapidly decays; and very little of it is left, after it has lain a year. In warm weather this decomposition goes on very rapidly, and whoever has been upon the shore among the weeds, in Spring, has noticed the strong odor emitted which is almost sickening to some persons.

We are safe in saying that millions of loads of it are wasted, every year, in New England alone, and wasted, too, where they are most needed,—on our poor, hungry soils, along the coast. If the article is half as valuable, as the analyses would show; and as the few imperfect experiments already made, would lead us to believe, we have the means, in sea-weed alone, of doubling the value of every arable acre in New England, within two miles of tide wash. Our shore farms may become gardens, and rival the West in their grain and grass products. The immense quantities of meat, butter, cheese and grain, imported into New England, may be better raised at our own doors.

We suspect that there is enough already known upon this subject, to effect the change; if the knowledge could only be systemized, and spread before the public. The farmers of Bristol, Barrington, Portsmouth, and Newport, (R.I.), must have secrets worth knowing upon this subject; or they would never raise and sell carrots at seven or eight dollars a ton, in the sea-ports of Connecticut. If sea manures are not at the bottom of this; (when the same article sells in other places for nearly double the
money,) then "there must be something rotten in that part of Denmark."

And, while we are upon the subject of these experiments, we would that there could be added experiments showing the value of sea mud, taken from ditches, and the small brooks, and creeks, near the sea. Sometimes great quantities of this mud are raised in cleaning out docks in our cities; and it could be had for the carting. It is also desirable that marsh turf should be tested, in the same way. We suspect that the best use that marsh grass can be put to, is to have the turf carted upon upland, and plowed in as a green crop. The feeding of salt hay to cattle, as a constant fodder for winter, is a species of barbarism and unthrifty farming, that we hope will soon be abolished.

Gentlemen-directors of our Agricultural Societies, shall we have the premiums offered for the proposed experiments the present year? Do not wait for farm-schools, Agricultural colleges, the U. S. Agricultural Society, or the new Department of Agriculture, that is to be, at Washington. This is a question of present moment to all our shore farmers: and one of great importance. We do not like to wait another year, when the thing may as well be done now. There are intelligent farmers enough in the fields of your labor, to put the thing through by daylight, in the year of grace, 1854; if you will but stick down the stakes, and give direction to their inquiries. If you lack the funds for the premiums, please knock the big bull or best ox in the head for this year; and help us to the needed knowledge on sea manures; so that we may fatten our pastures, and hereafter we will compensate your loss with fine specimens of behemoth, at your cattle shows. Shall we have the needed light upon Sea-Weed?

W. Cliff.

Stonington, Jan. 2d, 1854.
Our own experience and observation have satisfied us that there is no kind of farming that is so generally profitable as raising sheep and wool. It matters not whether you are upon the bleak mountains of Vermont or in the fertile plains of Texas; upon the prairies of the West, or the now solitary hills and mountains of the South. Everywhere and anywhere the sheep will live and thrive, and with proper care pay more for the labor and capital invested than any other animal, or any other system of farming. It is one of the most useful and economical machineries which has been given us to convert the vegetation of the farm to money. Were it for the first time presented to us, we should consider the sheep one of the most wonderful animals nature has produced for the use of man. Its annual growth of wool, so admirably calculated for human clothing, and used in every portion of the globe—its skin and flesh, and in many localities its milk, all serve for the necessaries or luxuries of man. There is no animal in which there is so little waste or so little loss. Of all other animals the cow comes nearest to the sheep in the profit it returns to the farmer, for if well cared for, it will pay for itself each year by the milk it yields, and defray also, a portion of the cost of keeping. But the sheep, for at least seven years of its life, will give an annual fleece each year equal to the value of the carcass; and the yearly increase will be nearly or quite equal to the cost of keeping, giving as a general thing a profit of cent per cent.

Is there any branch of farming or any other legitimate business that will yield for a series of years a profit of ten per cent? We assume that there is none. The very idea that profits of 50 per cent. would be realized in any branch of business, would set the whole capital of the country in motion. Farms would be sold, merchants would sell off their stocks, bankers close their banks, and indeed everybody who had money to invest would rush into this gold mine.
We aver, without fear of contradiction, in truth, that where any kind of farm animals can find subsistence, that sheep if properly attended to, will give a net profit on the investment of at least 50 per cent., and that with the ordinary management of farms, it will give some 20 to 40 per cent.

That there is no danger of overdoing the business we have shown repeatedly in previous numbers. The annual increase of population in the Union, requires the wool from three millions of sheep, so that to clothe the increased population would require an annual increase of sheep equal to four millions.

But when we come to consider that there is now an annual deficiency of over seventy millions of pounds, there can be no doubt that the wool-growing is the most stable pursuit that can be engaged in. We cannot glut the market, nor will there be any long time that the market will be depressed beyond the profitable point of production. On the contrary, it is certain that no farm product goes less often below this point than wool. It has long been a source of constant wonder to us, that so many farmers in Ohio and the Western States neglected the sheep, for the very precarious business of grain growing. Every year will give them a crop of wool if they but take care of their sheep. But there is no certainty for wheat, prepare the good ground ever so well. If we have been rightly informed, the wheat raised in the West, has cost the farmer more than he has obtained for it in the market. Too much dependence has been placed upon this most uncertain and expensive crop. We have tried wheat growing, upon probably, as good a wheat farm as can be found in Western New York; and we have also tried sheep upon the same farm, and we are free to confess that although we have a good market at our own door, yet we can raise a given amount of money quicker, and much easier with a flock of sheep than with wheat. But we find it well to raise both sheep and wheat, as by that means we find we get a better profit than to be confined to either alone, while indeed most land, that can be plowed, is the better to come at regular, and not long, periods under the plow. With us, and in this region, four years is as long as it proves profitable to leave land to grass. Very few resort
to naked fallows. Some mow their clover early and let it grow till August, when it is turned under, cultivated, and sown to wheat; others mow the first year and pasture with sheep the second, and then plow. Every good farmer keeps a few sheep at least. Very many who have been in the habit of putting up a large quantity of pork for summer use, now select out a few wethers, and give them extra keep and make their summer meat of mutton—decidedly the most healthful that can be used fresh, and thus realize the money for their pork fresh.

The inducements to grow more wool are, a sure market, less fluctuation from the point of profitable production than any farm product, a larger interest or profit on the capital invested than any other business, and therefore the best business as a general thing the farmer can follow. T. C. PETERS.

—Wool Grower.

FARMING IN KENTUCKY—ENGLISH STOCK.

The farmers of Kentucky are turning their attention to introducing improved breeds of cattle. A few months since several gentlemen in Fayette, Bourbon, and Woodford Counties—all practical farmers—made up a purse, and sent three of their number to England, with instructions to buy the very best cattle, horses, and sheep, which money could procure. They returned by the Pacific, on her trip in June, (as those of her passengers who had the pleasure of making their acquaintance will recollect,) and the cattle they purchased arrived a few weeks since. They were all sold at auction, on Saturday of last week, at the farm of Mr. Brutus Clay, brother of Cassius M. Clay, and proprietor of one of the handsomest farms in the United States. The attendance of both ladies and gentlemen at the sale, was very large. We have received from a private source the following statement of the price obtained for each animal
sold, with the name of the purchaser. Some of our farming friends will be a little astonished, we apprehend, at the prices of cattle and sheep. We are told that the Company received three times the cost of the animals.

**BULLS SOLD.**

<table>
<thead>
<tr>
<th>Names</th>
<th>Age</th>
<th>Price</th>
<th>Purchasers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young Chiltem</td>
<td>39 mos</td>
<td>$3,006</td>
<td>W. Warfield, Fayette</td>
</tr>
<tr>
<td>Diamond</td>
<td>37 mos</td>
<td>6,011</td>
<td>G. M. Bedford, Bourbon</td>
</tr>
<tr>
<td>The Comet</td>
<td>13 mos</td>
<td>2,073</td>
<td>S. Goff, Clark</td>
</tr>
<tr>
<td>Orontes</td>
<td>11 mos</td>
<td>4,256</td>
<td>B. P. Gray, Woodford</td>
</tr>
<tr>
<td>Fusilier</td>
<td>18 mos</td>
<td>1,425</td>
<td>R. W. Scott, Franklin</td>
</tr>
<tr>
<td>Senator</td>
<td>16 mos</td>
<td>2,000</td>
<td>Allen &amp; Card, Fayette</td>
</tr>
<tr>
<td>Belleville</td>
<td>7 mos</td>
<td>1,500</td>
<td>G. W. Sutton, Fayette</td>
</tr>
<tr>
<td>Challenger</td>
<td>7 mos</td>
<td>4,850</td>
<td>T. Goff, Clark</td>
</tr>
<tr>
<td>Fortunatus</td>
<td>9 mos</td>
<td>1,833</td>
<td>J. Van Meter, Clark</td>
</tr>
<tr>
<td>Yorkshire Maynard</td>
<td>17 mos</td>
<td>1,090</td>
<td>R. Taylor, Clark</td>
</tr>
</tbody>
</table>

**Total price** $28,681

**HEIFERS SOLD.**

<table>
<thead>
<tr>
<th>Names</th>
<th>Price</th>
<th>Purchasers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lady Stanhope</td>
<td>$1,500</td>
<td>B. J. Clay, Bourbon</td>
</tr>
<tr>
<td>Lady Fairy</td>
<td>1,100</td>
<td>W. Warfield, Fayette</td>
</tr>
<tr>
<td>Roan Duchess</td>
<td>900</td>
<td>Wm. Brand, Fayette</td>
</tr>
<tr>
<td>Goodness</td>
<td>2,025</td>
<td>D. S. Coleman, Fayette</td>
</tr>
<tr>
<td>Gem</td>
<td>825</td>
<td>S. Van Meter, Clark</td>
</tr>
<tr>
<td>Equity</td>
<td>1,000</td>
<td>Jas. Wallen, Jefferson</td>
</tr>
<tr>
<td>Necklace</td>
<td>865</td>
<td>H. Clay, Jr., Bourbon</td>
</tr>
<tr>
<td>Bracelet</td>
<td>750</td>
<td>M. M. Clay, Bourbon</td>
</tr>
<tr>
<td>Mazourka</td>
<td>3,650</td>
<td>B. P. Gray, Woodford</td>
</tr>
<tr>
<td>Lady Caroline</td>
<td>1,823</td>
<td>B. J. Clay, Bourbon</td>
</tr>
<tr>
<td>Duchess of Sutherland</td>
<td>900</td>
<td>Wm. Brand, Fayette</td>
</tr>
<tr>
<td>Maid of Melrose</td>
<td>2,200</td>
<td>S. Humphreys, Woodford</td>
</tr>
<tr>
<td>Muffin</td>
<td>535</td>
<td>Dr. Smith, Scott</td>
</tr>
<tr>
<td>Orphan Nell</td>
<td>1,000</td>
<td>John Hite, Bourbon</td>
</tr>
<tr>
<td>Flattery</td>
<td>815</td>
<td>W. B. Duncan, Clark</td>
</tr>
</tbody>
</table>

**Total price** $18,930

**HORSE SOLD.**

**Cleaveland Bay Horse** $2,800

**SHEEP SOLD.**

<table>
<thead>
<tr>
<th>Price</th>
<th>Purchasers</th>
</tr>
</thead>
<tbody>
<tr>
<td>$710</td>
<td>O. H. Burbridge, Bourbon</td>
</tr>
<tr>
<td>1,010</td>
<td>J. L. Watson, Bourbon</td>
</tr>
<tr>
<td>290</td>
<td>J. L. Watson, Bourbon</td>
</tr>
<tr>
<td>270</td>
<td>H. Hodges, Bourbon</td>
</tr>
<tr>
<td>200</td>
<td>J. S. Watson, Bourbon</td>
</tr>
<tr>
<td>221</td>
<td>H. Van Meter, Clark</td>
</tr>
<tr>
<td>230</td>
<td>R. Ford, Scott</td>
</tr>
<tr>
<td>140</td>
<td>O. H. Burbridge, Bourbon</td>
</tr>
</tbody>
</table>
Price. | Purchaser.
---|---
1 Buck | 60 | J. G. Kennard, Fayette.
2 Ewes | 104 | L. Castleman, Fayette.
1 Buck | 755 | J. Carr, Fayette.
1 Buck | 400 | Kennard & Clay, Fayette and Bourbon.
1 Buck | 240 | M. Clay, Fayette and Bourbon.
1 Ewe | 330 | M. Clay, Bourbon.
1 Ewe | 280 | Kennard, Fayette.
1 Ewe | 230 | M. Clay, Bourbon.

Total price $5,359

**SUMMARY.**

<table>
<thead>
<tr>
<th>Bulls</th>
<th>$28,681</th>
<th>Heifers</th>
<th>$18,900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horse</td>
<td>2,800</td>
<td>Sheep</td>
<td>5,359</td>
</tr>
</tbody>
</table>

Total $55,740

**Note.**—There is error, either in the items, or in the footings-up; not knowing which is correct, we let the figures stand, as we find them in the report.—Ed.

---

**STUDY THE INSECTS THAT DAMAGE THE FARMER.**

For some reason agricultural entomology is less understood than almost any other branch of rural knowledge. This general neglect of an important science, is doubtless one cause of the alarming increase of destructive insects in many parts of the country. Let the subject be fully and critically investigated, and the result will show that man unwittingly destroys thousands of birds which Providence intended to subsist on insects, and keep their larva from devouring the farmer's wheat and other grain, and the gardener's vegetables and fruits. If we study Nature's laws we shall discover the important fact that no great class of animals or plants can be exterminated without inflicting severe and irreparable damage on the human family. Even insects perform important functions in the economy and exact balance of organic nature. Subsisting mostly on vegetable substances, they check the strong tendency, in many districts and countries, to the over-production of plants. If there were no insects, and no birds, the existing relations between the animal and vegetable kingdoms could not endure a year. The order of nature would be broken up, and the growth of forests and grasses
would extend out of all proportion, as compared with the gramin-
ivorous and carnivorous mammalia. The change might not
arrest public attention at first, but soon the new order of things
would indicate the usefulness and necessity of both insects and
birds. These were created because the plan of the Creator would
be incomplete without them.

If this feebly expressed view of created beings be sound, man
cannot nearly exterminate the birds of a country and not, in ef-
fect, augment indefinitely all the insects that prey upon his crops,
and greatly annoy his domestic animals. We wish to lay the
axe at the root of the tree, and show that natural laws demand
the multiplication of the beautiful feathered tribes, whose music,
has a deeper meaning, as the voice of the Invisible, than man with
his murderous guns has yet dreamed of.

Suppose the State of New York had a thousand robins where
it now has one, how many caterpillars, moths, worms, grubs, and
other voracious insects would these birds consume? If public
opinion were only enlightened on this subject, so as to protect all
insectivorous birds, we should soon cease to complain of curcul-
ios, weevil, peach tree and apple tree borers, pea-bugs, and a
hundred garden bugs, flies, snails, grasshoppers, locusts, cotton,
and tobacco worms. We have had opportunities for studying
most of these depredators, and regard the unnatural destruction
of birds, or their expulsion from all so-called civilized commu-
nities, as the principal cause of the increase of insects. The re-
productive powers of these are incredible to one who has paid
no attention to entomology. There is not an animal nor a plant
known to science upon which no insect subsists. The larva of
mosquitoes consume myriads of infusoria, that grow in stagnant
water. The millions of "wiglers," that may be seen in reser-
voirs of rain water, grow and wax fat on some thing more sub-
stantial than air or pure water. By consuming the organized
elements in which decay has already commenced, insects often
purify water and the atmosphere. The young of a common
flesh-fly adds 200 fold to its weight in 24 hours. This can only
be done by the enormous consumption of very nutritious food.
Imagine an ox that weighs 1,000 lbs. adding 199,000 lbs. to
his weight in a day or a year?
If it were not for the fact that insects destroy one another, and thus keep down their numbers, they might perhaps entirely exterminate all other living things, and die from starvation, leaving not a plant or animal on the globe. Among all the 100,000 different plants, and 200,000 or 300,000 different animals, how wonderful that no family of either obtains the mastery, and rules supreme! Plants and animals maintain a perfect republic; the balance of power between them all is complete. Man, by his superior endowments, is able to disturb this comprehensive and delicate balance more than any other order of beings; and he can never fulfil his high destiny until he studies, comprehends and obeys the laws of his Maker. To this standard our agricultural and horticultural knowledge and practice must rise, before we have a right to expect complete success. Let us then study Nature, and observe how nearly all the feathered tribes, with which we are familiar, hatch their young at that season of the year when insects and their larva most abound, when so many millions are daily consumed to feed the voracious broods of rapid growing birds. In Maryland and Virginia large flocks of turkeys are reared expressly to be driven through tobacco fields by children "to worm the crop." A turkey from the time it was large enough to eat a worm till it attains its full growth, will consume an incredible number of insects, and forcibly illustrates an important law. Barn-yard fowls, doves and pigeons may also be cultivated at a profit. Of all the works written on poultry, we have never seen one that treated the subject in a truly scientific and philosophic spirit. When an adult turkey eats 100 ounces of dry corn, what will the excrements formed by this corn, weigh after they are dried? Who has investigated this matter?

In their relation to agriculture, both ornithology and entomology are much less understood than many suppose. The learned and scientific men who have cultivated these departments of natural history have been unacquainted with agriculture, and their language is too classical and little known, for their book to be much read by farmers.—Gen. Farmer.
Among the sciences which have a collateral bearing upon agriculture, none is more important than that which relates to insects. These constitute the largest division of the animal kingdom, and as the greater part of them live upon vegetable substances, they are continually interfering with cultivated plants. Thus, different insects attack respectively the roots, stem, bark, leaves, blossoms, fruit, and seed. Sometimes the same insect is destructive to several plants; and sometimes the same plant is infested by several insects; whilst the larva and adult of a single species frequently infest distinct plants, or different parts of the same plant;—as the root, when a grub; and the leaves or blossoms, when adult.

The long-snouted insects, which include the weevils, chesnut worm, plum weevil, pea-bug, &c., include eight thousand distinct species, known to entomological science; and of these upwards of three hundred belong to the United States. In general, the habits of each species, the district they inhabit, the plants they infest, the periods of their growth and appearance, and their enemies, differ somewhat; so that there is room for a wide range of observation, with a view to prevent the ravages of such species as are found to be destructive.

From the small number of original observers, our knowledge of the subject, with few exceptions, is taken from European books; and as there have been but few systematic attempts to figure our own species, the general reader cannot have a clear idea of the subject, upon which he wishes to inform himself; even with the aid of the best descriptions.

The shell-fish of Massachusetts have been well figured in Dr. Gould's book, published by State authority; whilst the useful volume of Dr. Harris on injurious insects, remains without this important adjunct to its usefulness. The State of New York has devoted four hundred thousand dollars to an investigation of
its Geology, Agriculture and Natural History: yet the last broke down the moment the portions were exhausted which the public could get in other books, so that the portion of the fund, which should have been devoted to an original work in the deep and useful department of entomology, was spent upon mere compilations.

In some districts, a fourth, half, or more, of the crop of wheat is destroyed by the Hessian fly; and in the Patent Office Report for 1849, page 9, it is estimated that in this country, the loss from the ravages of insects amounts to twenty millions of dollars annually. In some districts, the crops suffer from year to year; in others they are irregular, or appear for the first time, so that the preventive knowledge, which is acquired through a course of years in certain localities, has to be re-acquired through the laborious process of experience, when an enemy appears in a new locality; — and this is likely to come too late to allow preventive measures to be adopted. Thus the apple tree blight appears as a white down, which might be taken for a small mass of loose spider web, or the cottony down of some plant, but which turns out to be the covering of a kind of plant louse. This down is so conspicuous and accessible, that but little time and care are required to crush the enemy beneath, and preserve the orchard from entire destruction at a later day, when the evil has increased to such an extent as to be unmanageable. Yet how few who form new orchards, pass the young trees under review, to ascertain whether they are not founding a colony which will prevent them from enjoying the result of their labor; although a hundred trees may be inspected in a day, and an examination of the young planted trees be made in the same period.

The vast tracts of uncultivated land in the United States, might be preserved for years from the ravages of many noxious insects, by subjecting seed and plants from old localities to a rigid inspection or quarantine, and establishing local nurseries from disinfected materials. By such means the enemies of the apple, peach, plum, pea, and some grains, could be circumvented.

Entomologists are frequently blamed for not working more in
a practical direction; that is to say, those who never owned an acre of land are expected to devote themselves to the preservation of the lands of others, as if geologists should employ themselves in discovering mineral deposits upon the lands of their neighbors. Most entomologists have other pursuits; and as very few of them have time to devote themselves to the entire range of study, it frequently happens that noxious species do not enter into the portion, to which they devote themselves. Moreover, entomology, as a science, is one thing; and the application of the science, another, which belongs to domestic economy, yet its application is so important, that it should not be left to the casual and unsystematic study of those who attend to it only when accident throws a subject in their way. The history of many species is neglected, because it would require the expense of plates,—an expense which is seldom necessary in writing for entomologists alone; these being able to understand a technical description, or comparison with an allied form, already figured in the systematic books. Individual zeal, unless accompanied by wealth, would not produce a work like the magnificent one by Audouin, on the insects injurious to the vine, published by the French government; or that of Ratzeburg, in three quarto volumes, on the insects which attack forest trees.

False views of the relations of science to agriculture and domestic economy will be held by any community, which has not called for even an elementary knowledge of nature, in the education of the young; and amongst whom those institutions are deemed the highest, where Botany is taught without plants, Geology without rocks, Surveying and Navigation without instruments, Hydrostatics without water, and Entomology without insects. Such a condition of education can only be remedied by the establishment of agricultural schools, where cautious observation, theory, and practice, go together; the pupil being educated to reason upon the complicated phenomena of nature, as they occur; that he may be able to apply their laws, when the occasions arise which require them. This would prevent apparently trifling circumstances from passing unheeded, which might have an important bearing upon the interests of the farmer.
Some of the States support normal schools for the education of teachers. These might be made the means of diffusing useful information among the population; but, unfortunately, they carry little with them calculated to interest, or instruct, their future pupils in the operations carried on in the great laboratory of meteorological, chemical, vegetable, and animal nature.

In fact, our entire system of education has been built up and monopolised by, and for, a very small portion of the population; those for example, who study rhetoric, or how to talk, but do not learn to act; and who fancy that the details of logic will enable us to reason correctly. Pupils are taught to such an extent from books, and so little from observation, that in most instances they merely know that the book-maker knew certain facts, and the laws in connection with them,—as in Astronomy, where not one pupil in fifty has an idea of the motions of the planets, however fluently he may repeat his lessons. In a school book, the question Why is vinegar sharp? is answered by stating that it has an acid quality, which is taken for an explanation, although acid (acidus) is merely the latin word for sharp—a "logic" which is quite characteristic of the "literary" education in vogue.

Columbia, Pa., December 17, 1853.

---

FRUITS.

THOUGHTS ON THE DURATION OF VARIETIES.

BY W. D. BRINCKLÉ, M. D., PHILADELPHIA,
Ex-President of the American Pomological Society.

Do varieties of fruit wear out? The affirmative side of this question was maintained with singular zeal and ability, by the late Thomas Andrew Knight, President of the London Horticultural Society. And in our own country his views have found an able advocate in Mr. Townley, of Wisconsin, whose papers contained in the sixth volume of the Horticulturist, are masterly
productions, and should be read by all who feel an interest in this subject. Professor Lindley, Editor of the (London) Gardener's Chronicle, the lamented Downing, and most of the American Pomologists, have taken the opposite side of the question, and ably contend for the unlimited duration of varieties.

The importance of arriving at a correct solution of the question cannot be too highly estimated, especially if it be true that varieties do wear out. For, in this event, those cultivators, who plant extensive orchards of kinds which have passed their acme, must necessarily experience great disappointment, and incur a heavy pecuniary loss.

For wise purposes, all terrestrial objects appear to be so constructed as to be constitutionally liable to the destructive effects of time. This is equally true of animate and inanimate bodies. Impressed with this belief, we cannot regard varieties of fruit as an exception to this universal law of nature.

Before proceeding further, however, with our remarks, we will endeavor to avoid being misapprehended, by defining the expression *wearing out* as applied to varieties of fruit. By *wearing out*, we understand that epoch, in the existence of every variety, when, from a constitutional cause, the fruit begins to deteriorate, or the plant perishes. This epoch, we hold, varies in different varieties. In one it will commence soon after puberty, or even long before it; in another it may be delayed for centuries; but, in all, it will arrive sooner or later.

That certain varieties do become deteriorated, all pomologists admit. Various causes, however, are assigned for this deterioration. Mr. Downing, who is high authority on matters pertaining to horticulture, says: "While we admit that, in the common mode of propagation, varieties are constantly liable to decay or become comparatively worthless, we believe that this is owing not to natural limits set upon the duration of a variety; that it does not depend on the longevity of the parent tree; but upon the care with which the sort is propagated and the nature of the climate or soil where the tree is grown." Now is it to be presumed that the White Doyenne, or the Brown Beurre, or the
Chaumontelle, or Old Colmar have been propagated with less care than the Autumn Bergamot, which, it is alleged, bears as fine fruit now as it did nearly two thousand years ago. And where is the evidence that the climate, in the vicinity of Philadelphia or Boston, has become so altered within a few years;—or that the soil has been so exhausted of essential inorganic elements,—as to prevent the White Doyenne from bearing the same fine fruits it did, formerly, in these localities. Had there been a deficiency in the soil, of any of these requisite elements, surely it should have been demonstrated by analysis. What the supposed absent elements are, Mr. Downing informs us in the following sentence: "All along the sea-coast where the soil is light, and has been exhausted, by long cultivation, of lime, potash and phosphates, the inorganic elements absolutely necessary to the production of fine pears, many varieties that once flourished well, are now feeble, and the fruit is often blighted." That the blighting of the fruit is not attributable to the cause here assigned is clearly established by the fact that, in this very same soil, other pear trees, and various crops do well, that require just as much of these essential inorganic elements, as do those varieties which it is conceded no longer flourish there.

In regard to the Autumn Bergamot, even admitting that it has been in existence nearly two thousand years, and that it bears as abundant crops of as fair fruit as it ever did, can we legitimately draw the inference that this variety will never wear out? As well might we contend that a man, who has arrived at the age of three score and ten, will live forever, because he did not perish in infancy or in the prime of life, like the rest of the offspring of the same parents, whose constitutions were intrinsically more feeble and consequently, less able to resist destructive influences.

Again it has been argued that the Brown Beurre and White Doyenne cannot be worn out varieties, since they comprise nearly half the pear-trees annually introduced from France into this country. This is owing either to the fruit of these kinds being held in high estimation in France at this time, or to their commanding a ready sale here. If the former, the market
of Paris must still be abundantly supplied with them, as in former days; which is not the case. Then they are only sent here because they are saleable. And the demand for them in this country continues for three reasons:—1st, they have always enjoyed a high reputation for excellence—2d, they still flourish in our cities—3d, the authority of our most distinguished pomologists has been adverse to the doctrine of the wearing out of varieties.

Some of the opponents of Knight's theory point to many of the new pears, as already exhibiting symptoms of decay or bad health, in localities where the reputed worn out kinds have ceased to flourish. This, we contend, is only an evidence of the limited durations of these particular kinds. For all will acknowledge that many others of the new varieties have not yet exhibited the slightest symptoms of decay or bad health in the infected districts, which they should do, if the cause of the decay or bad health were extraneous, instead of being constitutional. Let any one plant a number of seed of pears, apples, or other fruit; and expose the plant thus produced, as we have repeatedly done, to the scorching summer's sun, the extreme cold of winter, and to all the inclemencies and vicissitudes of our climate. The inevitable result will be, that many of them will perish; some in a week, some in a month, and others at different periods of time; the duration of the existence of each being limited, ceteris paribus, by its natural constitutional feebleness. A similar diversity in the limited duration of the life of children is seen by us daily; one will effectually resist the same influences that will prove fatal to another; and this resisting power is not always dependent on external developments, but on an intrinsic constitutional vigor.

In the article on the duration of varieties, in the Fruit and Fruit Trees of America, Mr. Downing makes the following remarks: "We consider the Belgian mode of producing new varieties greatly inferior to the English one—since it gives us varieties often impaired in health in their very origin. If any further proof of this is desired, we think it is easily found by comparing the robust vigor and longevity of many native pear trees
to be found in the United States—some of them 80 or 100 years old, and still producing large crops of fruit—with the delicate trees of several new varieties, now in our gardens, from Europe. These varieties are delicate not only with respect to their constitutional vigor, but they are also more susceptible to injury from the severity of our winter’s cold and summer’s sun.”

After such an admission from one who advocated the unlimited duration of varieties, we are not surprised that even Mr. Downing, towards the close of his brilliant career, should begin to question the correctness of the opinions he had formerly entertained on this subject. In the 6th volume of the Horticulturist, page 371, after giving the views of De Candalle in favor of the permanency of varieties, Mr. Downing adds: “We are not sure that De Candalle’s theory will hold good with the finest fruits and florist’s flowers. The species might be recovered, but we question whether in many instances that will be the case with the variety.” . . . . “With regard to improved varieties, as they are understood in a horticultural point of view, they are doubtless prone to decay, in proportion to their degree of departure from the physiological perfection, which enables the wild variety to maintain itself continually on the surface of the globe, independent of the care of man. A wild variety will produce seed under favorable circumstances, but many highly improved varieties, in a horticultural sense, do not perfectly mature their seeds under any circumstances whatever; and, therefore, must be physiologically imperfect, and being so, a priori, if it be admitted that imperfection is a principle of decay, it will not be denied, that no plant imperfectly constituted can carry on its functions but for a more or less limited time, even under the most favorable circumstances.”

This direct and unequivocal admission, by Mr. Downing, that some varieties have a more or less limited duration, clearly indicated that an important change had taken place in his views respecting the wearing out of varieties;—a change which, we are inclined to believe, would have been more thorough and complete had his life been prolonged.
Afew of the advocates of the unlimited duration of varieties attribute the cracking of the fruit of the White Doyenne and of other deteriorated kinds to the depredations of insects or parasitic fungi. It is a well established fact that insects and vegetable parasites are prone to attack enfeebled or diseased plants in preference to others; and that they rarely do material injury to those in which the vital force maintains its original vigor. A suitable nidus for the development of the germs of the Cryptogami is not presented by healthy vegetable productions. The commencement of decay in a tree, or a decline in its constitutional vigor, from some cause or other, are essential requirements to the growth of parasitic fungus sporules. Moreover, if the cracking of the fruit were owing to the ravages of insects or cryptogamic parasites, independently of any enfeebled condition of the variety, then all other varieties grown under the same circumstances shall also suffer in a similar way from the same causes; but they do not.

We have already incidentally remarked, that the White Doyenne still flourishes in our cities. Similar success attends the inter-mural cultivation of most of the reputed worn out kinds. Since this is the case, it is triumphantly asked—how can they be considered worn out? The same inquiry could have been just as appropriately and exultingly made a few years ago, respecting these same varieties, which then bore fine and fair fruit in various other localities in which they are now utterly worthless.

The truth is, these varieties receive a degree and kind of protection in our cities which will enable them to resist and counteract for a time, and it may be for a long time, the pernicious influences that tend to impair their constitutional vigor. Medical men well understand the vast importance of appropriate hygienic measures in cases of impaired health. By judicious management, an improvement will generally take place in all the functions of the body, and life may be prolonged for years. But eventually a period will arrive, when all human agencies will cease to be beneficial. By well directed treatment, deteriorated varieties of fruit may also be partially renovated. And,
in some instances, the return will more than compensate for the outlay. But more frequently the trouble and expense of the extra management will be ruinous to those who engage in fruit culture for profit.

W. D. BRINKLÈ, M. D.

THE AGRICULTURE OF FRANCE.

BY DR. A. L. ELWYN, PHILADELPHIA.

The agriculture of a country may be considered the highest evidence of its civilization. It is the labor of its people, well directed, well instructed, and well paid; it is an indication that the mind of its millions is happily, honorably and industriously employed; — that wealth is judiciously and economically expended; — that the great purposes of Heaven are fully carried out; — that the great duty of man is thoroughly performed; — that the laws of our nature are obeyed; and that the earth welcomes man's efforts, and repays his toil.

But in what part of the world does this magnificent condition of things exist? Is there a land, or has there ever been one, that came up to these requirements? Is there one which fulfils the half of them? Can the eye, or the imagination of man at this moment rest upon a nation of happy and contented land-workers? Can the human foot tread a soil, in which all smiles with the beauty of high cultivation, — where the heart is not fretted and wearied with the crimes of a government, or the despair of a people;— where the earth has not been stained with blood, as well as sweat; and where bad laws and unequal legislation, have not lessened all enterprise and energy? We fear the dove sent forth on this benevolent mission, would return to the bosom whence it went forth; having found no rest for the foot. No part of the world can be found so perfectly well tilled, as to indicate a body of intelligent proprietors, fully remu-
nerated for their labor; or (to state the matter somewhat more correctly) there is no country, whose whole surface is a garden. Land is only well cultivated in small portions, from the accidental settlement of industrious and enterprising men, or from the quality of the soil, or from the nearness of a market, or from the happy possession of some intelligent and public spirited friend to improvement, whose individual efforts give vigor to the coming life of unborn generations, and who deserves a prouder monument than the proudest king.

In Europe we have part of Holstein, parts of Belgium and Holland, the East Lothians, and small portions of England; here, smaller portions of New York, the Eastern part of Pennsylvania,—as comprising the whole face of the earth, which is said to be very well cultivated.

What is the reason of this narrow limitation to good farming? why is it, that an art essential to the very existence of the human family, in which some millions of hands and heads are working, and many more millions of mouths and minds kept at work by it, is in so low a condition? A bad system, bad government, bad laws, incessant wars and the bad qualities of human nature itself,—such as indolence, and the love of excitement, which scorns the peaceful pursuit of agriculture,—may be returned as sufficient replies to the question.

The first obstacle to improvement—a bad system of cultivation—has held agriculture in chains from the earliest periods.

It is true, that the millions of Egypt, were fed from the soil of a small country, but more because of its richness, than of the cultivation or industry of its people. The swollen bosom of the Nile threw upon its banks, each year, spoils brought from an unknown interior, richer than those with which Sesostris returned, after a nine years devastation of harmless nations, and after fighting battles so bloody and useless, that his name is perpetuated, as the most considerable scoundrel of his era. Egypt, too, sent to foreign countries, her agricultural products, and this little people besides feeding her own millions, and those of other nations, and supporting armies so large, as to be almost by themselves nations, accumulated wealth, whose results are still the
admiration of mankind. From the alluvial deposits of a single stream, arose cities, temples, palaces, obelisks and pyramids, whose size and grandeur fix the gaze of the world. Yet who records this to the honor of agriculture? or remembers that more is due to seed, than the sword, and much more to wheat, than to war? Crime and passion fill the pages of history; while the modest husbandman and his modest pursuit—the man whose vigorous toil, and whose business has supplied the wants, and added, many fold, to the resources and riches of his country—passes to oblivion; and the stage is left clear, to the wider sweep of lawless ambition,—its love of ruin, its selfish aggrandizement, and to its active assassination, known as war.

We pass from this land, over which mystery settles like a dark impenetrable cloud, to the more interesting people of Greece, we are met with almost equal difficulties. The mind of man, that in Egypt had done so much in certain directions, (though it has left very little in the art of agriculture) does not, among the eminent glory of Greece, and a degree of intellectual wealth, that has fed the thoughts of Empires, seem to have reached that form and that condition of civilization, which raised the tiller of the soil, and his occupation, to their proper consequence, and consideration. Emerging from a condition of barbarism, or rather that savage state, which from the elementary history of all nations;—cut up into tribes, warlike, vindictive and ferocious, who, like other savages, regarded the field of battle as the place for the best development and demonstration of human power;—with despots and kings, and oligarchies, those political conditions, in which the one or the few command, and the many obey,—it was a long time before any part of Greece began to feel that popular control which comes, slowly and gradually but certainly, in the career of nations. Until this is felt, neither intelligence or improvement are to be looked for, among the masses of a people; and thence it is, that except from the Poets, with whom the laws of the country is an element of their genius, we should not know that the soil of Greece was cultivated.

With Rome it is different, the longer duration of her republic, and the wider extent of popular rule; with the pressing neces-
sities of a numerous population, not only gave agriculture an impulse, but induced some of her patriotic citizens to attempt the making it an art, and establishing its principles.

But the present has profited very little by the labor of ages that have preceded, nor does the farmer of the present day know much of, or care much for, the modes of agriculture that were practised in the times of Moses, Herod, or Columella. Still to the philosopher and the historian it is interesting to know how the millions of former times, were fed: nor can the mind and the imagination resist the examination, or forbear from the attempt, to bring before them the anxious labors, the duties and the practice of a fellow husbandman of a thousand years ago.

But let us turn to a land of our own times,—one blessed with the highest fertility and the finest climate; and mark in her the results of a bad system of agriculture. One would have supposed that where nature smiled so sweetly, all would have been peace; but on the contrary, France has steeped herself in blood and crime, and within a period short in the career of a nation, has like a Harlequin, leapt from one extreme to another, and changed, as she moved, every line with which she started. Within sixty years, she has torn herself away from every association of the past; broken up the foundation of all law; followed, to the torment and torture of the rest of the world, the bloody track of a phantom, she called Liberty; been trodden on by, and placed herself under the iron heel of power; raised and overwhelmed Empires; let loose the demon of political strife over Europe; and, after all her fluctuations, all her struggles for improvement, belied and shown to be false the whole tenor of her actions, by settling down in meek submission, under a despotism more leaden than that of Tiberius.

It may be well supposed that this hurricane has not left agriculture unscathed. The art, the element of whose life is peace, has shared in the convulsion. Even at the present time, after all the experience that should have been condensed in it, we cannot learn that it improves; but on the contrary, the result of wars and revolutions, seem to have made its prospects darker, its practice more hazardous.
The great difficulty under which this Empire has labored and, still labors, is, that she is the victim of theories. Her first revolution was brought about by what Bonaparte called Ideology,—that is, abstract notions of right and wrong, in themselves good and liberal; but urged by brains heated by vanity and presumption, wrongly directed through ignorance, without experience or practical purpose, or with any object in view but running on under the guidance of an hallucination that made their will unsteady, and kept their imagination in a flame.

To the world at large, the whole French people for sixty years, seem to have been mad;—an unrestrained and dangerous body, setting their own houses on fire, and ready and attempting to act the incendiary and apply the torch to their neighbors’. With the destruction of their systems of government, they have torn to pieces their laws, and, as was to be expected in a revolution, made but a small advance in progress towards a strong, clear and satisfactory arrangement of principles. In all countries, but for still stronger reasons in a country like France—but little commercial—the tenure by which land is held is of the utmost importance. Where this is insecure, or wrongly founded, no people can be happy, no government safe. As nations live by the products of the earth; where they are unequally or imperfectly brought forth, by the unjust action or the mal-administration of laws, or from being founded on bad principles, the whole of society throughout its mass feels its shock, as deeply as if pestilence or famine had given the blow.

Whether France suffers from either of the above causes, it is not our province to decide; but that her agriculture is retarded, even retrogrades, seems to be conceded. With a people so intelligent, with capabilities and opportunities, so various and excellent, the cause of this must lie deeply; whether it be, in bad or mischievous legislation; in an unsettled condition of things, or in an attempt to make a new garment out of old materials; or by a wrong application of new ideas; or by bringing into collision the incompatible, the inexpedient and the impracticable; is better decided, by them who rule her destinies, than by one, who is merely examining a single element, though the most important one of her national condition.
The manner in which landed property is held in France, seems to be the first and foremost obstacle, to the advancement of agriculture. Through some theory, which seems composed partly of hatred to the Past and its associations, and partly of ignorance and inexperience in the art of government, they have created a mode of bequeathing landed estates, that, so far as we can judge at this distance, seems better devised to produce a land of paupers, than one with a hardy yeomanry.

It is true that it seems a natural and proper duty, for a parent to give his estate in equal portions to his children. The error seems to be in the law making this imperative. Such an obligation is comparatively harmless, where the property is money; but land cannot be divided infinitesimally, till it becomes like a particle of matter, an object of microscopic inspection and philosophic curiosity. A large estate, in such circumstances, would disappear in a few generations; and the descendants of the original possessor be, in all probability, the poorest of the laboring class,—objects of public charity.

An American, who is habituated to the idea of an equal division of property among the heirs of a deceased person, must consider the very different condition of a European country, and his own. Here is an outlet for all energy. The bold, the industrious, the enterprising or the speculative can try their fortune, in many different ways, without being jostled, disturbed or driven to excessive action by too sharp competition.

It is not so in Europe, the excess of population in the older countries of that portion of the world does not imply an excess of kind feeling and readiness to assist. Men, as a general rule, are not the more amiable from a hot rivalry in the race of avarice or ambition; and we are not therefore to suppose, that forty millions of Frenchmen heaped together in a country, that to our habitually extended view seems very small, are disposed to assist each other in grasping the object which all are pursuing: on the contrary, it is to be supposed there is much quarrelling, malice and hatred; that human nature develops itself, in all its modes and moods of intense misanthropy, without the slightest regard to christian benevolence, or the tenets of our religion.
believe to be the case, though they enjoy what they call Liberty and Equality, and have lately shown their understanding of the words and appreciations of the condition they imply, by electing an Emperor and establishing a military despotism.

If France were a commercial country, or possessed like our own, large bodies of unoccupied land; or, like England, had continents as her colonies; a division of property would be of very little consequence. The superfluous portions of a family could, in either of those circumstances, find employment or leave their homes. But where no such condition exists there seems no mode of making a growing population of agriculturists, in any way useful. They appear necessarily destined to a precarious and hard earned livelihood, or to the charity of the public.

Already, one half or more of the population of France are dependent on their labor as tillers of the soil; and of this large portion (as the women work too, and no doubt such children as have the strength,) the amount of labor necessary to support it, the quantity produced and the quantity to spare may be imagined. Still, under this kind of pauper independence, France, we believe, feeds herself; but what a slight chance there would be of her doing this, if exposed to some of the common unkindnesses of nature, is a painful reflection.

At present the tendency of things in that county, and the bearing of her legislation, is to destroy all large landed estates, and to diminish the smaller. There seems, under the influence of such a state of feeling, no hope of advancing agriculture as an art. Capital cannot be and will not be invested in land, when exposed in a course of years, to a process of pulverization which grinds down one's possessions to minute particles; nor can it be supposed that men would select a form of property, which, representing the labor of their lives bequeathed to their children, is to be dispersed and cut to pieces.

There are minor evils of a practical character, that stay the progress of agriculture, in France. The first that would strike the mind of the agriculturist, is the impossibility of forming or following any systematic modes of farming, where the divisions are extremely small; and, as seems to be the case where these
are not in a body, but at various and considerable distances apart, in a thickly settled country, cut up and parcelled out, there must be great difficulty, as well as inconvenience, in passing from one to another of these fields so separated; and the loss of time and loss of labor in cultivating fields so situated, must increase the expenses and lessen the profits. A rotation of crops, which is the basis of all good agriculture, is also impracticable; nor can grazing, or the raising of cattle, form any part of such an agricultural condition; nor can any extended improvement be introduced or adopted.

The French, themselves, seem aware of the evils of their position; but ideas of equality overbear ideas of comfort, or of progress; and they resist any change. A thousand acres of land, divided into twelve thousand distinct parts, and each of these having a separate proprietor, does not seem a condition of things, embodying those ideas of liberty and equality, that would be acceptable or worth the contending for with any other people. Still the matter belongs to the people of France, not to us, and if they prefer and are happy under such a state of things, no one has a right to do more than we have done,—to express an opinion, that agriculture will not improve under it.

It is true that science is at work, actively and laboriously, in studying all the operations of nature connected with agriculture; but this does not affect or reach the economical or political relations of agriculture; and the rest of the world are more likely to derive advantage from the labors of the scientific mind of France, than the people of that country. But what can science do, where land is in morsels, and mouths in multitudes? and of what avail is a chemical analysis, where there is no capital? and what hope is there of improvement in an art, where practice yields no revenue?

We do not mean that France should return to a law of primogeniture, or adopt any of the old inconveniences of the feudal system that she has so thoroughly destroyed; but some change seems necessary in the mode of dividing property, else it is difficult to understand how several millions of her population can be fed. When, as is reported, a family cultivates an acre or less, it
is clear there can be no support; and it is only a question of time, how long they can go on in this way, without starving.

It would however be doing injustice to France and her people, and the hopes of agriculture, too, to let it be understood that all the land of that country is in this condition of minute division; more than one half seems to be held by small proprietors, possessing a very few acres, and many less than one acre. Of the remainder, some is rented, and some farmed—by what is known in this country as—on shares. The result is, that the soil of France is not well cultivated, and in comparison with its natural fertility, its productiveness is very meagre.

If, as is no doubt the fact, the progress and the strength, or the decay and the ruin of a country, depends on its agriculture; then the condition of France deserves a close observation, both from the Patriot and the Philosopher.

EXPERIMENTS IN RECLAIMING SWAMPS.

BY J. W. PROCTOR, DANVERS, MASS.

Experiment No. 1—by S. Blaney, of Salem.

The locus in quo, of this operation, is situate among the sienite hills in the western part of the city. It contains one and a half acres, extending 40 rods in length, and varying from five to ten rods in breadth—the borders irregular, with here and there a ledge of rocks obtruding. Eight years ago, it was so densely covered with a growth of alders and blueberries, as to be almost impenetrable to man or beast; especially at those seasons of the year, when the water was on; at that time, the bushes were cut, and it remained without culture, or product, until 1852. Mr. B. then becoming the owner set about bringing it into use.

His first operation was to cut a ditch through the centre, down to the hard pan; the mud from which was taken to the upland, for the purpose of compost. Subsequently five or six cords of
refuse animal matter, collected from his wool shop, and a neighboring glue factory, were mingled with this mud, making a heap of about twenty cords. The roots of the bushes, and the stumps of the early growth of yellow birch, were effectually removed. About two hundred cart loads of gravelly loam, from the shores adjoining, were carted on to fill the holes and gullies. Then the sod was inverted by the plow, to the depth of ten inches. The surface was then pulverized and evened as far as practicable, and the heap of compost applied.

About the first of September, 1852, it was sown with grass seed, herds grass and red top. The whole expense thus far, (all the labor having been hired by Mr. B,) is estimated not to exceed $50 per acre. No other fertilizing material was applied.

In July, 1853, at the first cutting, 4 tons 1,170 pounds of hay were obtained; which sold on the ground for $18 per ton. At a second cutting three tons more were obtained, of a quality equally valuable; — making the entire produce, within thirteen months of the time of seeding down, 7 tons 1,170 pounds; or more than five tons to the acre; — paying for all the labor and material applied, and leaving a surplus of $30 per acre.

Mr. B. considers his land worth $300 an acre; because it will sell for this amount. He makes no pretension to skill in culture, or to knowledge of chemical science; — but thinks from the product of his field, he made the right application, in the right way. The surface presented now is as handsome ground for mowing, as is any where to be seen; — all the surplus water being effectually drained off, by the centre ditch, with a few covered side cuts. Mr. B. proposes to put on a thin coating of loam, the coming winter, when the ground is frozen.

It is rare, that an experiment is witnessed, paying so well in so short a time.

*Experiment No. 2 — by Adino Page, Danvers.*

This was on the Danvers Town Farm, on a lot containing between three and four acres. Operations commenced in 1850. Previously, it had been a sunken offensive morass; yielding no valuable growth.
A main ditch was cut through the centre, and shore ditches on either side, and cross ditches, about fifty feet apart. Many of these were covered, so as not to appear on the surface. In some places, the mud was eight feet or more deep; in others, from three to five feet deep. From the shores and knolls adjoining, gravel and loam was carried on, so as to give firmness, sufficient to sustain the plow; when the water was drained eighteen inches below the surface; where the soil could not be well stirred by the plow, it was effectually done by the use of a meadow hoe, constructed for the purpose. Most of the labor was done by the paupers at the Alms House, (chiefly foreigners), and no pains was spared to have it thoroughly done.

Very little fertilizing material was applied, it being thought rich enough to support any crop that could be started upon it. It was sown to grass in 1851. Very little grass in 1852; but between twelve and thirteen tons of the best hay on the farm, was cut on this meadow the present season.

It is so situated, that the surplus liquids from the pig-yard and the sink, can be conducted in any quantity, and diffused over the land. With such an application there is good reason to believe four tons to the acre of valuable fodder, will be grown annually on this meadow. It is now an appendage to the farm, of the value of eight hundred dollars at least; whereas four years ago, it was of no value, but rather an eye sore, and an offence—breeding miasmata and death.

The exact expense of the experiment, Mr P. is not able to estimate. The work has been done at “odd-jobs,” when other labors did not press; and by those who would have done little else, if this work had not been done. The entire operation, as superintended by Mr. Page, the master of the house, is creditable to his judgment and his persevering industry; and the best certificate that can be given of his competency to superintend works of improvement, of much greater extent.

Experiment No. 3, by T. E. Payson of Rowley.

This was commenced about three years ago, on a part of an extensive meadow, of fifty acres, or more. The water having
been drained away by a main ditch, and a sufficient number of cross ditches; Mr. Payson commenced by cutting very narrow ditches about five feet apart, and throwing the contents of these ditches upon the surface.

The beds thus formed were planted with potatoes.

In 1852, the crops of potatoes paid for all the labor and manure, that had been applied to the part thus treated. The potato vines were thrown into the narrow ditches, and the entire surface smoothed and sowed with grass seed. The crop of good English hay the present season exceeded three tons to the acre.

Several other acres were planted with potatoes, in like manner, the present season, but in consequence of the failure of the crops by reason of the rot, the labor has been, in a measure, lost. Until the rot came on, Mr. P. felt encouraged to hope, that he should soon have an extended field of English mowing, producing three tons or more to the acre; without any expenditure of capital in bringing it about, except the moderate price, of about $20 an acre, paid for the land.

Experiment No. 4—by Horace Ware, of Marblehead.

This was on about three acres of swamp, situated adjoining a pond of about five acres. Mr. W.'s first operation was to cut a ditch through upland, of half a mile in extent, to the shore of the sea, so as to reduce the height of the water in the pond four feet. This caused the surface of the swamp to settle about two feet, leaving it still about two feet above the pond. Then all bushes, and other obstructions were cleared from the surface, and a coating of gravel and night soil mixed, to the depth of about three inches, was applied.

The crop of potatoes, grown on this land, the first year, paid for all that had been done to it, and it has since yielded annually three or more tons of good English hay to the acre. Mr. W. considers this reclaimed meadow as valuable, now, as any land appurtenant to his valuable farm.

I might specify other experiments that I have witnessed, some of which did not succeed; probably because the work was not thoroughly done; and the fertilizers applied, were not of the right character. But as a specifying of such operations, may
not be gratifying to those who performed them, and may possibly deter others from attempting improvements, I forbear to name them.

It will be observed, that each of the specifications given, are simple in their character, and such as are in the power of any owner of land to imitate. I have preferred to state facts with no theories appurtenant, because the one can be seen and known for certainty, while the others are not, at all times, so certainly known.

In the few instances thus hastily sketched, many spears of grass have been made to grow, where none grew before. I record them for the encouragement of those who have acres of like unproductive land, capable of being reclaimed. The first thing to be done is to effectually remove all superfluous water. The water should never be suffered to interfere with the roots or fibres of the vegetable growth. In all these low grounds there is an abundance of fertilizing material, that has been accumulating for centuries; and as soon as it can be relieved of excess of moisture, it can be made productive. If I do not mistake, upon lands of this description, is the best opportunity for successful experiment, to be found on our farms, especially in hay products — one of the staple productions of the country.

The same lands, when reclaimed, can be made to grow vegetables in great abundance. I have never seen better products of beets than on such land. At least thirty tons to the acre, I have seen growing. How they will answer for cabbages and carrots, I am not advised. Parsnips, I know, will grow luxuriantly on such land; why this luscious and pleasant flavored plant is not more extensively grown, I am unable to conjecture. For the feed of many animals, nothing can be better.

Very respectfully yours,

J. W. PROCTOR.

Danvers, Dec 21, 1853.
To Wm. S. King, Esq.
The Jersey — often miscalled the Alderney — breed of cattle is not as well known, or appreciated in this country, as it deserves to be. The general idea of the Jerseys has been received, without question, from English writers; who describe them as anything but desirable creatures.

Thus Mr. Parkinson, sustained by Youatt, and uncontradicted by Martin, gives this very unflattering — and, as Youatt says, "very little exaggerated" — picture of them: "Their size is small, and they are of as bad a form as can possibly be described; the bellies of many of them are four fifths of their weight; the neck is very thin and hollow; the shoulder stands up and is the highest part; they are hollow and narrow behind the shoulders; the chine is nearly without flesh; the hucks are narrow and sharp at the ends; the rump is short, and they are narrow and light in the brisket." Youatt adds, "the Alderney, considering its voracious appetite — for it devours almost as much as a short-horn — yields very little milk; that milk however is of an ex-
traordinarily excellent quality, and gives more butter, than can be obtained from the milk of any other cow—* * *—but it is not rich enough, yielding the small quantity that she does, to pay for what she costs."

This is not the daguerreotype of a four-footed beauty, by any means, and her honesty is not unimpeachable, for she "don't pay for her keep."

But there is a bright side to almost every picture, and we have high literary authority for thinking, that even the Prince of Darkness is less of a charcoal color, than his usual portraits. "In proportion to the quantity of milk," says Martin, "the butter it yields is astonishing. A single cow has been known to give nineteen pounds of butter weekly, for several successive weeks," and Youatt adds, "one excellency it must be acknowledged, that the Alderneys possess; when they are dried, they fatten with a rapidity, that would be scarcely thought possible from their gaunt appearance, and their want of almost every grazing point, while living."

Whether or not this is a faithful picture of the outward form of the Jersey Cow, may be judged by every reader who will compare it with the engraved portrait at the head of this paper. The daguerreotype from which the drawing was made, does her the injustice of increasing the size of her head; (because from the position in which the cow was taken, the head was necessarily nearer to the instrument, than other parts of the animal;) but in other respects, the picture is perfect. Her bag, not yet springing, is seen to be capacious and well formed. It extends well down upon her belly, and is wide, and well up behind. The milk-veins (so called) that indicate a large secretion of milk, are large, and appear like cables; in this development, she excels every other animal of the breed we ever saw, and equals the best Durhams. Her tail is fine, and well set on. Hips, wide, and square with the back. Barrel, broad and roomy. Neck, straight and well set to the shoulder. Head, small, fine, and clean. Eyes, full and gazelle-like in expression. Ears, small, thin and of a deep orange color within.

The following letter from Mr. Henshaw, will be read with interest:
"My first importation of cows was on July, 1850, and consisted of the Cow "Butter Cup,"* then five years old, and the Heifer "Daisy," then three years old,—they were both selected, at a high cost, by a most competent and critical judge, out of one of the finest herds on the Island—"Butter Cup" having been the first prize cow at the preceding agricultural show in Jersey.

"My second importation (July, 1852) embraced the Cow "Daphne," five years old; the Heifer "Dora," twenty-two months, and "Violet," eighteen months.

"I have not had a fair opportunity to test the milking qualities of my first importation. The Cow "Butter Cup," was owing to rough weather, badly bruised on the passage, and arrived in a weak condition. She slipped her calf in December, 1850, her time being out in Feb. 7, and commenced, by giving eight quarts of milk on hay alone, which increased to sixteen quarts on grass in May and June. The last year, (1851), to gratify some of our Norfolk County Agricultural friends, I sent some of my cows for exhibition to their Show. The consequence was the loss of another calf by "Butter Cup," with the same results as to her milk as the preceding year.

"Daisy," has dropped two fine calves in February, '51 and '52 and has given, at her best flow in May and June, sixteen quarts on grass.

"Daphne" was nearly dry when she arrived, and will drop a calf next month. "Dora" calved in September, (when two years old) and "Violet" in October, (when twenty months old) and now give ten or eleven quarts of milk daily on ordinary feed. I ought to say, that I never give my cows any grain. My custom is to give them good hay, and clean water, with one peck of carrots per diem towards Spring—always feeding regularly, keeping them clean and warm during the cold months. One word only as to my Bull, "Sailor." He was dropped on shipboard by a cow bought with my first importation, that cost in Jersey thirty-five pounds—the mother dying on the passage.

I remain truly yours, Samuel Henshaw."

*Whose portrait heads this paper.—Ed.
One of the finest herds of Jersey Cattle, in the country, belongs to Roswell L. Colt, of Patterson, N. J., and few men in America have had equal experience of the several breeds. From a letter which he addressed to us, some time since, we make the following extracts:—

"I have imported three Alderneys, and purchased two,—not Alderneys, but true Jerseys. In every instance, I have found those raised in this County, particular the second stock, better than the imported. My first stock was of the pure breed from Jersey, imported by the late Nicholas Biddle,—four cows and one bull, at the cost of $1,600.

"Now, as to milking qualities, they give twelve, fourteen to sixteen quarts a day, and, of course, fall off towards calving; but the difficulty is to dry them up, so as not to starve the unborn calf. I am sure that nine out of ten of Alderneys would milk the year round; and it is a curious fact, that a heifer of the Biddle stock, that I let Mr. Daniel Webster have, running with a young calf, had milk before she had taken the bull, or was twelve months old.

"The fact is, that any one who wants good milk and is willing to pay for it,—not blue milk, or milk and water,—he ought to own an Alderney. I have tried all the breeds—Long Horns, Short Horns, no Horns, Holsteins, Ayrshires and Devons; and have come to the conclusion, that, in our region, Alderneys are best."

Mr. Thomas Motley, Jr., has furnished us with the following statement of the doings of one cow; by which it will appear either that English writers have made a poor pen-and-ink sketch of the Jerseys, or that American air is more favorable to their lacteal secretions:—

Jamaica Plain, December 30, 1853.

I beg leave to enclose the statements of Butter made by my Jersey Cow "Flora."

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Lbs.</th>
<th>Oz.</th>
<th>Month</th>
<th>Day</th>
<th>Lbs.</th>
<th>Oz.</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>18</td>
<td>12</td>
<td>14</td>
<td>July</td>
<td>6</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>&quot;</td>
<td>25</td>
<td>13</td>
<td>08</td>
<td></td>
<td></td>
<td>12</td>
<td>04</td>
</tr>
<tr>
<td>June</td>
<td>1</td>
<td>14</td>
<td>00</td>
<td>Aug.</td>
<td>3</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>&quot;</td>
<td>8</td>
<td>14</td>
<td>00</td>
<td></td>
<td></td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>&quot;</td>
<td>15</td>
<td>14</td>
<td>00</td>
<td>&quot;</td>
<td></td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>&quot;</td>
<td>22</td>
<td>13</td>
<td>00</td>
<td>&quot;</td>
<td></td>
<td>11</td>
<td>04</td>
</tr>
<tr>
<td>&quot;</td>
<td>29</td>
<td>13</td>
<td>00</td>
<td>&quot;</td>
<td></td>
<td>11</td>
<td>04</td>
</tr>
</tbody>
</table>
An imported Alderney cow, belonging to Elijah Read, of Tewksbury, gave in seven days in May last, 110 quarts of milk, producing 17 3-4 lbs. of butter.

These are a few of the many proofs, that might be adduced, of the fine milking qualities of this breed; while, in richness of milk it is conceded to surpass all others.

The term "Alderney," as applied to this breed is, as we have hereinbefore stated, a misnomer. The original Alderneys are a race in every respect inferior to those which are bred in the island of Alderney, as well as on Jersey, from the improved Jersey stock.

Col. Le Couteur, Aid-de-Camp to the Queen of England, and Viscount of the Isle of Jersey, is undoubtedly the highest living authority upon the history and merits of this breed, and has probably done more than any other man to improve them and bring them into notice. He declares that the true Jersey Cattle were introduced into the Island of Alderney by his great-grandfather, to whom it belonged; but that, owing to the inferiority of the pasture, they soon deteriorated from the original stock. It is very possible, and indeed probable, that Youatt and others may have taken their ideas of the breed from this deteriorated stock; for, as Col. Le Couteur further remarks, many animals are passed off as of the true Jersey breed, "which were very inferior to the genuine animals of that breed."—The time has gone by when we can attempt to revert to the original name, with any chance of success; but we may bring forward the good qualities of the original race, and fasten them upon their true and undegenerate descendants.

Whether Youatt and other writers were right or wrong at the
time they wrote, or whether they got hold of the right or the wrong animal to "sit" for the picture they drew, we do not take upon ourselves to decide; nor is it of much consequence. The animal which we have in America under this name, is one which we should commend to all who value good milk for family use. They appear to give a handsome quantity of the choicest milk, and do not exhibit that very voracious appetite for which they have had a reputation.

A friend who has made many importations of cattle has furnished us with the following bill of expenses, for two heifers imported about a year ago:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>For hay and other provisions</td>
<td>£9.9.3</td>
</tr>
<tr>
<td>Expenses from Jersey to Liverpool</td>
<td>11.3.0</td>
</tr>
<tr>
<td>Keeping in Liverpool (one week)</td>
<td>2.3.6</td>
</tr>
<tr>
<td>House on board ship</td>
<td>6.10.0</td>
</tr>
<tr>
<td>Commission, &amp;c.</td>
<td>17.8</td>
</tr>
<tr>
<td></td>
<td><strong>£30.3.5</strong></td>
</tr>
<tr>
<td>Freight £10. Primage, 10s.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.10.0</td>
</tr>
<tr>
<td></td>
<td><strong>£40.13.5</strong></td>
</tr>
</tbody>
</table>

This is a few pence short of $200. The freight on these two animals ($50) is about one half the usual charge. Primage, is an allowance made to the master or hands of a vessel for loading. Almost all the other charges, it will be seen, are extortionate.

There is no reason, now, why any one, (except one owning a herd, and desiring a fresh strain of blood,) should import. We have here, already, animals of every English breed equal to any that are left behind. Besides, the remark of Roswell L. Colt, in this paper— that the animals raised in this country (from imported stock) are superior to the imported,—is worthy of consideration. In the first place, they are acclimated; and, again, they are unstrained and uninjured by a sea voyage.

The best and largest herds of Jersey Cattle, owned in America, to our knowledge, are in the hands of the following individuals:—Roswell L. Colt, Patterson, New Jersey; John A. Taintor, Hartford, Con.; Samuel Henshaw, Boston, Mass.; and Thomas Motley Jr., Jamaica Plains, Mass.
I am now acquainted with ten different kinds of pumpkins and squashes belonging to the same group as the Valparaiso, Cuba, and Marrow.

1. The mammoth pumpkin, or Potiron (*Cucurbita maxima*)
The fertile flowers have five stigmas, and the fruit five carpels; having raised it in my own garden during the past summer, I can vouch for the fact.

2. A glaucous or grayish-green pumpkin or squash, more or less turbinate or top-shaped, growing to a large size (three and a half feet or more in circumference,) mistaken by some seedsmen for the mammoth pumpkin. It was raised in my garden in the summer of 1851, and was found to have four or five stigmas, and the same number of carpels.

3. Mr. Cole's Connecticut pie-squash or pumpkin. Spherical or spheroidal, three and a half feet in circumference. Raised in my garden in the summer of 1851. Stigmas mostly four; in a few flowers, five. Carpels mostly four; a few of the fruit had five.

4. Elongated Valparaiso squash, tapering very much at each end, striped longitudinally with white. Raised from Valparaiso seed in the summer of 1851, in my garden. Stigmas and carpels five in number.

5. The common ovate Valparaiso I have not raised; but have bought and cut many specimens, in all of which I found four carpels. I have examined the young fruit, growing in grounds of my friends, and found, often, five carpels.

*We are indebted to Amos W. Stetson, of East Braintree, and Daniel T. Curtis, of Boston, for the following paper, under those circumstances: Mr. Stetson had exhibited at the show of Mass. Hort. Society some splendid Cuba Squashes and Hybrids of his own raising; which attracted the attention of Dr. Harris who has for several years been prosecuting inquiries in this interesting department. Learning Dr. Harris's desire to dissect and examine one of this variety, Mr. Curtis procured and forwarded to him a fine specimen. From the correspondence, that ensued between the three gentlemen we have, by permission, compiled this paper; and now, in justice to Dr. Harris, make this statement.*
6. The autumnal marrow, introduced into notice and use by Mr. Ives, of Salem. This forms an exception to the general rule in the fruits of this group; having ordinarily only three carpels, and but three stigmas. Four in some rare cases are, however, to be found, as already stated.

7. The Cushaw squash, probably introduced from Louisiana, where it was known and cultivated more than one hundred years ago. It is mentioned by LePage du Pratz, in his Historie de la Louisiane, Vol. II, p. 11, by name of *Giromon en forme de cor-de-chasse* (hunting horn,) and by the translator of the work by the vernacular name of Cushaw. This is a crooknecked squash, with permanent nipple-formed style, and stem like that of the marrow. It has only three carpels, at least I found but three in the few specimens that grew in my garden in 1852. It is so tender and delicate, that it rots in our climate before it becomes fully ripe.

8. The Acorn-squash, evidently nothing but a variety of the one called by French writers *LePepon turban* (*Cucurbita pilifera* of Duchesne.) Fine specimens were raised in my garden in the summer of 1851. It is the heaviest squash of its size that is known to me, and one of the best flavored. Flowers mostly with five stigmas, some with four; carpels five or four.

9. Mr. Stetson’s Cuba squash. Though I have not yet cut it, I am convinced from its external characters that it must contain five carpels.

10. Mr. Dunn’s round rough-skinned pumpkin or squash, weighing one hundred and fifty pounds, which was exhibited at the last annual Horticultural Exhibition. This probably had five carpels,—if its external characters are to be relied upon.

In the same group are to be placed Mr. Hyde’s Coquimbe squash, and Mr. Pope’s California squash, which were exhibited last September. The number of carpels in those is unknown to me, not having seen them cut. Probably in both will be found more than three carpels.

I have enumerated these kinds in order to show that the group, characterized by me, has been established upon personal examination and dissection of most of the known varieties; and that the
character of five or four stigmas and the same number of carpels (rarely three) is one which prevails in this group.

Heretofore it has generally been understood, and is so stated by most botanists, that pumpkins and squashes were originally natives of Asia. On the contrary, I find in ancient works abundant evidence that they were unknown in the Eastern Hemisphere before the discovery of America, and that they were originally natives of the tropical and warm parts of America, and that they were extensively cultivated by the native Indians from Canada to Chili, before any European settlements were made on this Continent.

After a very careful examination of the plants and the fruits of as many kinds as I could obtain or raise, I have discovered certain distinguishing characters which will enable us to class all of them in three natural groups. These are:

1st. Summer squashes,—such as the broad scalloped, the long and warted, the round or orange, the variegated or gourd-squashes, and various other kinds. Most of these (but not all) have upright vines which do not run, (hence sometimes called bush-squashes,) and small or feeble tendrils or claspsers. Their leaves are very rough, and mostly five lobed (like a grape vine leaf.) The fruit when cut across is found generally to have five double rows of seeds; more rarely, only three double rows. The fruit-stem is enlarged next the fruit, and is deeply five-furrowed and five-angled. The fruit (which ripens early) is fit to be eaten only in an unripe state, or while it still remains tender. When fully ripe, the rind becomes whitish or pale, hard and brittle, like a gourd-shell; and the pulp is dry and spongy. The seeds are small and thin, and of grayish or dirty yellowish color.

2d. Pumpkins and winter squashes,—including our common New England field pumpkins, the crook-necked squashes, the custard squash, and many other kinds. All these have running vines, with strong branched tendrils or claspsers, very rough more or less deeply five lobed leaves, and a five furrowed and five angled fruit-stem, which is very much enlarged towards the fruit. On being cut across, the fruit is found to have only three double rows of seeds. The fruit is fit to be eaten only when
fully ripe, and it may be kept, with care, all winter. It does not dry up like summer squashes, but finally rots and becomes soft and spoiled throughout. The rind, mostly thin and tender, never becomes dry, woody, and brittle; and the pulp remains fleshy and succulent till it decays. The seeds are larger than those of summer squashes, but are also thin and grayish or yellowish.

3d. Nippled pumpkins and squashes;—such as the Mammoth pumpkin or potiron, your Cuba squashes, Valparaiso squashes, the acorn squash, the autumnal marrow squash, and some others. All these have running or climbing vines, with strong branched tendrils. The leaves are rather soft, some of them as soft and velvety as those of the mallow, they are never deeply lobed, but more often nearly round or heart shaped. The fruit stem is short, thick, wrinkled, but not five angled and not five furrowed, and when green is nearly as thick at one end as at the other. The fruit when cut across, is found generally to have four or five double rows of seeds, more rarely only three double rows; and I have found this smaller number only in the autumnal marrow squashes, and it is by no means a constant character even in them, four or five double rows being occasionally found in them. The fruit is fit to be eaten in autumn and winter, and only when fully ripe. It is always distinguished, however various the shape and size, by having a small nipple-like projection at the blossom end, this projection being the permanent style of the blossom. The rind, which is generally remarkably thin and tender, never becomes hard, dry, woody and brittle. The flesh often of a rich orange color, and remarkably sweet and fine grained, never dries up or becomes spongy like that of summer squashes, but remains succulent till it rots. The seeds are large, broad, thick or plump, mostly of a beautiful, clear white color; but in certain very dark fleshed varieties, the seeds are of the color of old ivory, or cream colored.

Now, I am strongly inclined to the belief that all the pumpkins and squashes of this third division were originally natives of the western side of America, as Chili, Peru, Mexico, and California. Some of them have doubtless been introduced into the West Indies, whence they occasionally are brought to our markets.
A COMPARATIVE REVIEW
OF THE
AGRICULTURAL AND MANUFACTURING INTERESTS IN THE UNITED
STATES; WITH SOME SUGGESTIONS UPON THE ONWARD PRO-
GRESS OF AGRICULTURE.

BY B. MUNN, NEW YORK.

The advantageous results consequent upon the division of labor on the one hand, and upon the operation of combined efforts on the other, as applied to all branches of manufacture, have of late years been as surprising to theoretical reasoners, as they have been unforeseen in amount, by those from whose well directed energies they have originated.

Some venerable fathers still are with us, who have lived in the times of those discoveries in cotton spinning, which were the forerunners of that onward progress in that branch of manufactures, which has been almost yearly increasing in value and importance, to the no small advantage of the manufacturer, and of the consumer.

The same period (or nearly) saw that wondrous motive power arise, from which, assisted by the thoughtful and well directed experiments of a Fulton and a Watt, has been derived the endless secondary, no less than primary, advances in the economy of manual labor, of which the world is at this day enjoying benefits almost innumerable!

It will not be forgotten, that in the outset of all the discoveries alluded to, amongst the various opinions formed of the comparative and positive advantages or disadvantages, dependent upon them, was the idea entertained by the operatives, whose employment was connected (as they supposed) with the continuance of the former methods of manufacture, that the substitution of machinery for manual labor, would necessarily lead to the destruction of their occupation, and that, consequently, destitution, or the diversion of their labors to some other (to them unknown) mode of gaining a living, would be the natural result of the contemplated improvements.
That such a feeling should have prevailed is by no means extraordinary, seeing that such results in the then known state of circumstances, were not so contrary to the *prima facie* view of the subject, as to appear absurd or unreasonable. The immediate consequences of anything which entails upon us present loss, or inconvenience, are always too vividly depicted upon our mind, to be counterbalanced by more remote benefits; which, even if certain to arise, are too distant to relieve us from the immediate cause of apprehension.

At the present time it is needless to prove the absurdity of these alarms, since the interests amongst which they were the most rife, are now among the first to perceive, in the particular manufactures alluded to, that the increased demand, consequent in a principal measure upon the reduced cost of production of the manufactured article, has enormously counterbalanced the economy of labor (so far as the artizan at least is concerned) by opening in connection with his former employment, new channel for his energies. The quantum of labor required, as well as the remuneration that the increased business and profits of the manufacturer enable him to pay for it, being greatly superior to the supposed advantages enjoyed by the artizan under the former old system.

Thus, in manufactures, have the manufacturer and the artizan arrived, although by different routes, at that which is undoubtedly a sound philosophical axiom, namely, that "The cheaper way any manufactured article in demand can be produced at market, the greater will be the sale and the aggregate profit to the producer."

It is also observable that the gradual advance towards *more perfect* production, whatever be the branch of manufacture examined, has progressed in a direct ratio with the increased application of mechanical science to that manufacture.

The history of the Steam Engine, and of the various manufactures to which it is now deemed indispensable, as well as that of the various mechanical appliances in the Forge, the Foundry, and in the Factories of the Cotton Spinner, the Cutler, and numerous others, will convey to the mind of a person but
superficially acquainted with any of these manufactures, a conviction of the truth of the remark contained in the preceding paragraph.

To travel for a moment, from the view above cursorily taken of the general operation of the introduction of labor-saving machines upon the manufacturer and the artizan, and cast a glance over its operation upon the consumer and upon the operative and laboring classes in other occupations of life, let us consider whether here the result has been beneficial or prejudicial.

Let any one reflect upon the present retail prices of iron work, cutlery, cotton goods, woolen manufactures, or manufactures of any other description in which he knows mechanical facilities to have been introduced in recent years, and then let him ask himself the question as to their present and their former prices. We know well that very many causes extend into the question of price, besides the one to which we are now directing attention; but we question whether all persons entering upon the inquiry will not be disposed to arrive with us at the conclusion, that in no instance has any decided manual-labor-saving machinery been permanently introduced into any manufacture, without its having been productive of a material and very decided reduction of price to the consumer. Thus the benefit resulting to all the classes referred to from the introduction of labor-saving machinery is evident. In short, a retrospect of the last sixty years presents to every man acquainted with the greater branches of manufacture, in which machinery is now largely introduced, such a contrast of comparative productive power, and relative economical cost when compared with a prior date, as indicates a rapidity of onward progress which is unequalled in the history of any previous age.

It is deserving of some consideration to inquire whence has all this arisen? Why should the manufacturing community be the one which apparently has thus uniformly progressed at a ratio which, when compared with some others, (and amongst them the agricultural,) appears so disproportionate? The reason appears in a considerable and very principal degree to depend upon the subject matter of the inquiry.
The mind of man is finite, and it is generally most successful in its efforts when it is not perplexed by a multiplicity of objects. The manufacturer has some special subject of consideration. The iron master, his iron. The cotton spinner, his cotton. Upon these his energies are concentrated. Turning and twisting in his brain the subject as he may, and whatever the object at which he aims; the thing to be worked upon, and with, is the same. Certain facts, also, connected with the properties and capabilities of his material, he knows to be too well ascertained to remain the subject of doubt or controversy. In reference to these ascertained points he commences his study where his predecessors left off; and he has generally little need to lose time in experiments or speculations upon them. In short his trade or his science (call it which you may) is, to a certain point, reduced to a system and the inquirer of to-day, feels that unless he is guided by the ascertained data of the past, and continues his efforts at advancement, upon a well digested plan regulated in accordance with these data, he has little prospect of adding to the stock of knowledge already existing amongst the members of his own calling in the manufacturing world.

It is, we believe, mainly to be attributed to this starting upon certain known facts, and acting upon a systematic course of experiment, or of mental study of the subject, that the vast strides in the manufacturing world, have of late years been attained.

The extent or value of these advances it is scarcely possible to overrate. And when it is considered that the limit of objects included in them is little less extensive than the discoveries themselves, the conclusion becomes all but inevitable, that if the human mind had been directed upon other subjects than manufactures with equally well guided influence or systematic inquiry towards the object in view, a great advantage, adequate in some degree to the amount of intellect engaged upon the consideration of it, would have been made in other branches of science and art besides those connected with manufactures.

The inquiries upon which we have entered in the foregoing remarks, have been made with the design of introducing one which we now advance; namely: — have the last sixty years presented in
the Agricultural world an aggregate advance relatively equal to that which the Manufacturing world presents?

The review we have taken of the manufacturing interest has, as we have seen, proved that in most of the principal branches of manufactures, the discoveries of late years has placed the manufacturer of the present day very far in advance of his predecessors, both as to his power as a producer and the cost of the article produced. If we look at the farms of the present day, and ask the question, whether the produce as compared with fifty years ago is materially increased, and whether the cost of production has been greatly diminished, we believe that few farmers will contend that these questions can be answered in the affirmative. And if that cannot be done, one of two conclusions appears inevitable;—either the farmer fifty years ago had arrived at nearly the perfection of his art, (having reference to the capability of the soil,) or his art must comparatively have stood still. We are aware that it may be objected that in numerous cases land has become impoverished by the product raised. But so far from admitting that as a reasonable reply to the proposition, we urge that as an evidence of the stand-still or go-back system, (or more properly, want of system,) that has too generally prevailed.

That some great steps have been made of late years, in this country particularly, in the adaptation of mechanical power to the purposes of husbandry, is a fact which we recognize with satisfaction. In the tillage and in the croppings of land, we also are free to admit an advance upon the state of the same things fifty years ago. But in those particulars, which appear to come more within the intellectual province of the farmer, than the appliance of mechanical assistance, we think it cannot be contended (contrary to what might have been expected) that equal progress has been made, as in the latter.

When, however, we review these advances in agriculture, and contrast them with the cotton mill and the innumerable mechanical inventions in almost every branch of manufacture, and the application of steam to their use; whilst we with pleasure recognize the just claims of every scientific and energetic Agriculturist, who has steered an onward course to the meed of well earned
praise, we must express our strong conviction that upon a review of the last sixty years, the agriculturist must yield the palm of energy and enterprise to the manufacturer, upon a comparison of the exertions of the two, whether on this or the other side of the Atlantic.

This should not be so. Especially in a country like this, where the *vis vitæ*, (if we may use the expression) of the community, *regarded as a whole*, must be considered to be mainly based upon the success of its agriculture; — using the term, as we do, in its most comprehensive sense.

We propose to consider the cause of this state of things, and to offer some suggestions for individual efforts, which shall conduce ultimately to the direction of the National Agriculture, as a whole, to a more energetic course, and to more efficient aggregate progression.

We should regret that what we have thus strongly advanced, should be deemed to be intended as an implied censure upon a body that we so sincerely respect as we do the agricultural classes. But these are not times for concealing *truths*, because they are distasteful; and however unpalatable the assertion, the question is one of *fact*, and not one of *opinion*. If the *fact* is as we believe, and have assured it to be, the fault is not that of the writer; he merely states the fact; — and that, not to offend, but to suggest for the consideration of those affected by it, some remedy.

One cause of the comparative slow advance of agriculture, is to be found in the diversity of subjects embraced, necessarily, in every phase of its practical operations; and the consequent difficulty, frequently, of attaining a correct knowledge of the immediate cause of given results; whether of success or of the reverse. Temperature, and ever varying Meteorological changes, local position, variety of soils, with all of which most manufacturers have nothing to do, enter into and are inseparable from the farmer's daily toil; whilst in a great measure, they are not within his power to control. The consequence of this is, that the practice best fitted to one farm, and one year, are not equally so to another. Hence arises a difficulty in arriving at satisfactory con-
elusions upon even well directed experiments, and consequently much apparent inconsistency in seemingly similar practice. Thus again the imperfect state of our knowledge as to the qualities and effects and modes of application of manures, best suited to the different circumstances of land, and of crops, although now fortunately in an active state of investigation in many parts of the world by competent men, has not yet approached to such a state of advancement as to warrant correct theories to be assumed or ascertained with precision. There is no question that whilst much has been done by the agricultural chemist, he has in some instances allowed the tendencies of analytical studies to lead his mind to conclusions unwarranted by his premises, which here unfortunately, by clashing with the known results of the practical farmer's experience, led the latter erroneously to undervalue the real benefit to be derived from the discoveries of chemical science.

Whether the opinions we have arrived at upon the comparative attainment and the present relative portions of agriculture and manufacture, concides with that of our readers, or not; the well directed combinations which the agricultural societies have originated, and the judicious concentration of them in the United States Agricultural Society, are proofs that there is a large body of intelligent agriculturists who are now daily becoming more and more alive to the importance both of their interest and of their duties. It will therefore not be an unprofitable investigation to enter upon a consideration of the means which are calculated to carry onward with advantage the movement, which these agricultural societies evidence to be in operation. In other words to consider what course seems best adapted to give the farmers of the United States the full benefit of their influence and of their property.

To do this we must look at the subject from an elevated point of view; and see what appears to be the true interests of the agriculture of the country in the aggregate. And we may rest satisfied that that system, which appears desirable for the prosperity and progress of agriculture in a national sense, will be also that, which will prove the most advantageous to every individual cultivator of the soil.
A highly prosperous state of national agriculture is principally dependent upon the following considerations:—

1st. That there should be under cultivation as large a breadth of land as can really be farmed *efficiently*; having regard to the quality of the land, the amount of labor that can be employed upon it, and an adequate return for the capital invested in its culture.

2nd. That mechanical assistance should, wherever it can be profitably introduced, be brought in aid and substitution of manual labor; so that the cultivation of the soil may be carried to its highest known limit, with the greatest saving of manual labor.

3d. That the cattle and other domestic animals incident to the cultivation of land and its management should be those best calculated to repay the cost, food, and care, bestowed upon them.

How then are the desiderata embraced within these general heads to be attained? We answer by the more general adoption of a *system*, on the part of the agricultural community. Their greatest mistake is that they have, to an extent, regarded farming in a purely practical view.

The sound farmer should view his calling:—

1st. *As a Science*; which includes the knowledge of the laws of vegetable life; the constituent parts of vegetable substances; the nature of soils; and their chemical affinities.

2nd. *As a Practical Art*; which embraces the mode of tillage; the nature, properties and uses of different crops; the soils suited to, and the aliments required by those several crops; the rotation of crops; the mechanical appliances available in husbandry; and the descriptions, uses, and care of cattle and other animals.

The *science* of agriculture, is that department of it to which attention is at present most required, because it has been the most neglected. As regards an acquaintance with the laws of vegetable life we hope that it is not requisite at this day to advance an argument in support of the necessity for this informa-
tion on the part of the farmer. We will only assure him that such a general acquaintance with the subject as is requisite for him, is perfectly attainable in a very short time; and moreover that when once understood, it becomes so impressed upon the mind that it is retained ever after without a perceptible effort of memory. This we mention, because we have often heard the opinion expressed, that vegetable physiology is a branch of science intricate and laborious to attain. So far, at least, as is requisite for the practical use of the agriculturists, this assuredly is not the case.

An intimate acquaintance with chemistry, as applicable to the earth and tillage, is undoubtedly a subject of more recondite investigation. But the value of it is fully equal to all the time that may be directed to it. And, moreover in, the present state of this branch of chemistry, it is of moment that the student should have a practical acquaintance with the tillage of the ground. For his experience will aid his scientific researches and often prompt the direction of his experiments, as well as enable his mind to grasp, for further investigation, such unexpected phenomena as may arise, and which his past agricultural experience may point out to him as likely to lead to available practical results. There is therefore undoubtedly a noble field in this direction for the aspirations of the enterprising farmer; which promises a rich harvest to him of honor, of usefulness, and of ultimate pecuniary reward!

With the valuable works that recent years have produced upon this subject, there is no want of guides on this branch of farming science. We have only, in this paper, room to suggest the course in which such investigations should proceed, and that is:—the analysis of different soils, and of manures, having regard in reference to the latter, to their cost and consequent practical availability; and the investigation of the chemical combination of particular soils and available manures; the analysis of vegetable matter, with a view to determine its constituents in the different agricultural crops, and for the purpose of thereby ascertaining the kind of aliment required by them, and the soil consequently suited to them; and for the purpose also of comparing the rela-
tive advantages of different crops for food whether of cattle or of man. This latter subject we are convinced is yet but little understood either economically or physically.

When we enter upon the study of agriculture as a practical art, the mode of tillage at once opens a subject of inquiry almost inexhaustible.

We will suggest, shortly, some few subjects connected with it, worthy of investigation.

Spade husbandry, we believe to deserve a first place. If it is objected, that upon a large scale it is impracticable; whilst we see and admit the great weight due to the argument, we still press it upon the consideration of our readers for these reasons: We anticipate that the late, and future advance in the applicability of mechanical power to the uses of agriculture will gradually release, and leave available, much manual labor that is now necessarily otherwise employed; and as this occurs, we believe that the farmer will be wise to divert this, then surplus labor, in other directions upon his farm, rather than dispense with it. For the experience of hundreds can now demonstrate the practicability of raising from a given quantity of land of fair quality, not only a much larger than the ordinary crop, but a crop in many instances three or four times as great; provided, that in labor and manure, the requisite means are employed. And that this is as practicable upon a large and profitable scale, as it is well known to be by market gardeners, and by the population of many parts of China, admits of no reasonable doubt.

For, contrary to the supposition entertained some years ago, it is now well known, (as it will be found stated in Fortune's China) that the Chinese do not cultivate their land so highl, as they are in the habit of doing by means of manure and spade husbandry, because of their population requiring the utmost tillage of every acre of ground, (for they have whole districts of country laying wild and waste,) but because they find that high cultivation of a limited quantity of land yields the farmer a much more profitable and abundant crop than a greater breadth of land imperfectly tilled. And our readers will remember that in the propositions by which we preceded these remarks, we coupled
the expediency of cultivating a great extent of land, with the contingent, of the best course of tillage.

But upon the subject of spade husbandry let us not be misunderstood. We do not say that it is advisable or remunerative at all places, or in all kinds of land. What we suggest is, that its results so far as at present known, fully warrant its further adoption from time to time as, from the improvement in mechanical appliances, immigration or other causes, manual labor can be turned into that direction. It affords a reasonable prospect for adequate return to the farmer, and at the same time an almost inexhaustible channel for any quantity of surplus labor, from whatever source it may arise.

Upon the question of the properties and uses of different crops, (which we have alluded to as another branch of agriculture considered practically,) we would suggest the expediency of extensive experiment upon the relative value of root crops and leguminous crops, for the keep of cattle. The concentration of nutritious matter in peas, beans, and other crops forming the seed of the plant, is so very much greater than that contained in most other crops, that the question of the most profitable relative quantities to be grown of different crops for food, deserves more consideration than it has yet received. Again, the properties of root and other crops, as regards their effect upon animal economy is equally important. It has appeared to us that in reference to this latter question, much requires to be done to test the comparative values of the potato with general root crops, having reference to the extent of crop and ground, the tillage and the worth of each as food. We entertain no doubt whatever that the next few years will effect an amount of improvement in the economy of winter food, which will very largely increase the average stock of cattle now deemed profitable by the farmer.

The prosecution of the science of chemistry, (to which we have referred in a previous part of this paper) cannot fail to bring with it profitable instruction as to the adaptability of crops and soils to each other, and to the best course of rotation of crops and of the manuring of land.

The application of manures in a liquid state, is well deserving
of extensive experiment; and will hereafter, we doubt not, be generally introduced as mechanical assistance is made sufficient to it, and as manual labor from any causes can be better spared for the purpose. Upon this subject we may also benefit by Chinese experience. That it is an economical mode of application is now generally conceded. But that is not all. An acquaintance with the laws of vegetable life, will convince the farmer that the same quantity of manure supplied to vegetation in many crops at a particular stage of their growth, affords a stimulus just at the time when it is required, and the benefit to the growing crop is thereby enhanced in a much greater ratio than it would be by a much larger supply given in the ordinary way.

Another matter, which is not at present understood in reference to the use of manure in a liquid state, is the degree of concentration, at which it can be the most advantageously employed;—and again, whether irrigation can be usefully resorted to, on land subsequently, and in aid of its effect. Experiments in Floriculture, not only some recently made, but the known practice of old and very successful florists, lead to the conclusion that the growth of a plant may be increased in a remarkable degree, by the application of manures in a liquid state, at particular periods of growth; and further, also, that the mode, and especial time of its application can be so regulated, as to direct its energies at will, to the greater development either of the foliage, or of the flower and fruit. The importance of these results will be apparent when the different nature of crops are considered. In some the root, in another the stems and foliage, and in others again the fruit being the object of attainment. From some extended horticultural experience the writer can vouch for these views not being either theoretical or impracticable.

Mechanical assistance as applied to agriculture, is that branch in which possibly as much progress has been made as can reasonably be expected, for it is that with which the habits and business of agriculturists have the least apparent connexion. With the useful agricultural machinery and implements now before the world, it may be fairly expected that the farmer will find his ingenuity continually suggesting improvements; and that each
labor-saving machine will give rise to new mechanical combin-
ations, that will at no distant period render the agriculturist in-
dependent of much of the manual labor upon which he must
now rely for so large a share of his operations. If indeed, in
this department, it shall turn out (as a recent invention has led
some people to anticipate) that the spade itself shall find an ef-
ficient substitute, it is hardly possible to foresee any limit, to the
extension of the farmer’s riches, but that which would result from
his own unpardonable indolence.

The drainage of land is a matter which cannot be too closely
studied, in order to reduce the practice of it to the minimum of
cost. Upon this head we suggest the great advantages occasion-
ally to be obtained from a re-arrangement of the artificial
divisions of land, sometimes without, and at others combined
with, simultaneous drainage operations in land, by adjoining
landed proprietors. We also direct the attention of those of our
readers who may not have met with it, to an important paper
upon Mr. Cotgreave’s system of drainage, at a moderate cost,
which will be found in the volume of transactions of the Ameri-
can Institute, of New York, for the year 1851, page 264.

The improvement in the breed of cattle, is a subject that now
occupies, to a very considerable extent, the attention of agricul-
turists. But we would call attention also to the expediency
(looking at the vast extent and variety of climate of the United
States) of experiments in the direction of an increase in the va-
rieties of domesticated animals. The local knowledge, and the
acquaintance with natural history, which is so widely diffused
amongst the intelligent class to whom these remarks are submit-
ted, will doubtless suggest those species to which experiments
may be directed with the most promising prospects of success.
We will only mention as illustrative of our meaning, the Llama,
and some of the Goat tribe as animals whose wool or hair would
alone render them, it is believed, well worth attention. And in
connection with this branch of our subject, we cannot think that
now, that the prosperity of our readers, as a body, leaves them
the opportunity to give some share of their thoughts to the amen-
ities of life, we shall fail to excite their appreciation of “the
Beautiful," by pointing out to them the pleasure they will derive in appropriating a few acres around their homesteads, to the grazing of some of the more select breeds of cattle, whose graceful, and at the same time noble forms, roaming over the undulating carpet of green sward, or chewing the cud of contentment beneath the shade of some friendly denizen of the forest, would impart to the "Farmers Home," something of the character of elegance and refinement, without impairing thereby its useful or profitable purpose.

But whatever may be the opinions of Agriculturists upon the general view we have taken of the several branches of our subject, we trust that their vast importance, may induce many to be willing to take some moderate share of the trouble necessary to elucidate and afford the means of arriving at more accurate knowledge upon them. No general discoveries of importance can be obtained in any branch of science whose natural laws are not fully known, except by the repetition of experiments and by the comparison of combined experience. It is by observations derived from these sources, and compared with known natural laws (so far as they have been ascertained) that we must look for valuable improvement. Such results cannot be hoped for, in reason, by Agriculturists; except as the consequence of a well digested system; in which, whilst each one remains unfettered by the trammels of legal obligation, he nevertheless carries on his daily employment in accordance with some plan of mutual advantage to himself and to his brother farmer.

Such a system is not so difficult to suggest as a first view of the subject and its multifarious ramifications may appear to imply. Nor will its adoption as a guide entail any particular line of cultivation or of management.

If we had before us, now, accurate and sufficiently comprehensive records of what a large number of farmers have done in years past, with minutes of the soils, situations, mode of tillage, of cropping, and of crops; with the amount of labor and capital employed, we should have the primary materials from which to draw most valuable instructions. For by a careful examination of them the one with the other and the application of the dis-
coveries of more recent date in the sciences bearing upon the
subject, we should gradually arrive at a knowledge of the laws
by the united operation of which the practice of the Agricultu-
rists ought to be formed. The desirable thing therefore is to
induce farmers to keep accurate registers of the particulars above
alluded to. The preparation of a well arranged circular in a
*tabular form, would enable such a record to be kept with but
very little trouble to each individual. And we doubt not that
if the subject were once taken up, and such tabular records were
periodically transmitted to the Committee of the United States
Agricultural Society, a means would be found to deduce from
them the most valuable practical information for the common
benefit of the valuable body, whose interests it is the humble
attempt of this paper to promote.

Such are some of the means, by the improvement of which it
appears to us, that the future progress of the agricultural inter-
ests may be carried onward, with a fair prospect of advance,
commensurate in some measure with that of the various branches
of manufacture and art.

There is another point of view in which, the farmers of the
middle and northern States should look at their several interests,
modified by the "physique" of their respective localities. It
is this. Cotton is, as we know, a southern product, whilst the
manufacture of it is principally carried on in the northern States.
The increase of the cotton factories there during the last twenty
years, is good evidence that they are gradually progressing to
supersede altogether, as they have already done in some descrip-
tion of fabrics, the imports from Europe in this branch of man-
ufacture. But in all this the northern farmers have no direct
interest. Their localities may be benefitted from the increase in
the manufacturing community bringing them a greater home
market; but from the raw material consumed by the factories
around them they derive no benefit. Now there can be no ques-
tion that if flax, and wool, of native growth was produced in
quantities and at a price to compete with cotton (not wholly of
course, but for innumerable purposes which are now entirely
filled by cotton manufacture,) that the demand would soon in-
crease to so great an extent as to create what would, (as compared with the existing state of that market) amount to a branch of farming: and that of a very beneficial and important character. We know that the practicability of such results is questioned by many; but those who entertain such doubts are very imperfectly acquainted with the past comparative history of these several branches of manufacture, and with the true causes which have influenced the success and depression of each of them. Their present comparative positions in the manufactures of the world afford by no means correct data from which to judge of their claims to the consideration of the farmer. Numerous uses to which cotton is now applied derive their origin, not from the fitness of the material to the purpose, but from a combination of circumstances (some of a political and others of a social nature) having, at the time it was so first used, led to its adoption as a substitute for some other more suitable but too costly material. And this substitution has afterwards prevailed, to the comparative exclusion of the more fitting material; and that, after the cause which led to its adoption has ceased to exist. This state of things prevails at this time in reference to flax and wool, to an extent which is highly prejudicial to the northern farmer, no less than to the consumer. For the latter is as much interested in having that material in abundance, which can best supply him with the most suitable article at a reasonable price, as the farmer is in having his field of profitable production enlarged to its fullest extent.

The object that we have proposed in throwing together these remarks has not been to instruct the intelligent class of men to whom they are addressed, upon the subject of agriculture, upon which, doubtless they are practically much better informed than the writer. But our object has been to call attention to the paramount importance of an energetic progression in agriculture, from a point of view in which we think it has not been looked at with that consideration which it deserves. Because, since it is incident to humanity that each one primarily looks at his individual interest it results from this, that in social life classes of individuals do the same. And the history of the civilized world in all ages teaches us the lesson, that in proportion as the aggre-
gate interests of any class has been investigated and urged onward by its members as a body, so has that class flourished and enjoyed its legitimate rights and interests, in the social compact of which it has been a part. And as the professional duties of the writer, as a landscape gardener, are constantly affording him extensive means of observation of the condition of the agricultural interests in the middle and northern States, he has been forcibly struck with the difference, in corresponding things, of the degree of interest elicited in the agriculturist and the manufacturer, by circumstances in which their relative welfare has been involved.

The farmers of America numerically, and substantially as regards property, at present have the power, as they have the undoubted right, to support and maintain their fair and honorable share in the common weal; and the State Societies, and the United States Agricultural Society, afford them the necessary medium for united action in any direction that they see requisite. But they ought not to lose sight of the fact, that the manufacturing interest of this vast community, although yet in their infancy, are making rapid strides year by year, which will speedily give them a weight and influence politically, as well as socially, which will be found of imperious if not overwhelming consequence hereafter, whenever conflicts arise, (as in the nature of things they occasionally must,) between the manufacturing interest on the one hand, and the agriculturist on the other. It would be by no means difficult, did the occasion require it, to show by reference to precisely the same state of things in other countries, that within the last fifty years, such has been the consequence of a struggle between the two interests. And this, without imputing motives to either of a less honorable character, than that common regard to self interest to which we have before alluded.

We hope we may have succeeded in awakening some amongst our agricultural friends, who have not hitherto taken a comprehensive view of these subjects, to the importance of their active co-operation with the United States Agricultural Society; and then we will cheerfully yield to the intelligence of our readers,
the task of determining the best mode of furthering agricultural progress, which it has been we conceive the intention of the friends and promoters of this valuable social organization to advance. And although our own suggestions may one and all, upon perusal, be found valueless; if they shall become thus the indirect means of inciting more able intellects to the consideration and solution of the question, our labor will not be lost. Since, thereby the field of usefulness upon which the Society is embarked under such favorable auspices, will become further extended; and a step in advance will be made towards that cooperation of the agricultural community at large, which is alone requisite to render the power of the United States Agricultural Society as gigantic, as its objects are laudable in their nature, and will be universal in their beneficial operation.

B. MUNN.

New York, Jan. 2, 1854.

IRON IN SOILS.

BY LEVI BARTLETT, WARNER, N. H.

All soils are the result of geological agencies. The earthy, or mineral portions of them, were derived from the debris of the various kinds of rocks, which have in the lapse of ages, been disintegrated, and ground down, into pebbles, gravel, sand, clay, loams, &c.; constituting the various soils used for the purpose of cultivation.

Every farmer is familiar with the fact, that there is a wide difference in the capacity of soil for growing good crops of cultivated plants. Some, of the causes of these differences are readily understood by observing farmers. Some soils have too large a percentage of gravel, or sand, to be productive; others, too much clay; while others, so abound in all the constituents of a good soil, that they yield under ordinary cultivation remu-
nerating crops for long series of years, without recourse to ma-
nures. Again there are, to appearance, good looking soils, dark colored, loamy and friable, that fail to yield renumerative crops, under tolerably good cultivation.

The reason of this failure is not so apparent, nor so well under-
stood by farmers generally. The owners of such land, ma-
nure and plough, plant with corn; it comes up and looks well for ten or fifteen days; its growth is then checked, the leaves assume a red, or purplish hue, and the lower ones turn brown, dry up and perish; the covering of the main root is corroded, and frequently, it actually rusts off. To remedy this, new roots strike out near the base of the plant, and if the ground has been heavily manured, the plants so far recover, as to yield a tolerable crop; but a poor one is too frequently the result.

We have seen a great many fields of corn similar to the above described; the owners, then laying all the blame for their stint-
ed crop, to the ravages of the wire, or some other kind of worm. We have witnessed similar effects produced on oats, peas, beans, &c., when planted on such soils.

When grass follows the hoed crop, the first year it may pro-
duce a fair crop of clover; much less, the second; with very little herd grass (timothy,) and red top the third year. But they soon die out, and are succeeded by a short, fine grass, of poor quality, called in some places white top, in others, wire grass. It is quite dissimilar to June grass—or spire grass; — that kind forms a tough sod, while the wire grass, from its slender and brittle roots, scarcely offers any resistance to the plow. For pasture, this kind of soil is of little value. It may afford a "good bite" of grass, yet it is deficient in some of the important ingredients of good grass; and cattle, pastured upon such grass, almost invariably have what is technically termed the "bone disorder."

The deleterious or poisonous qualities of the soils under con-
sideration are generally occasioned by excess of sulphate of iron. This is derived from the decomposition of rocks, containing sulphate of iron. They are sometimes designated as "brim-
stone rocks." Sulphuret of iron possesses the property of at-
tracting (aided by moisture) and gradually absorbing oxygen; giving rise to the conversion of the sulphur into sulphuric acid,
and of the iron into an oxide, or base, which combines with the newly formed sulphuric acid, forming sulphate of iron— that is, copperas or green vitriol. This is readily soluble in water, and copperas-water is not the best kind of liquid to manure our plants with; as we know, by sad experience.

It not only debarks, and rusts off the roots of the corn plant; but, from its corrosive nature, soon eats up all vegetable matter in the soil; hence the case with which such land plows up,—there being no roots of grasses to bind and toughen the soil.

If a farmer must plant with corn his copperas soil, he will find it to his advantage, in addition to a liberal broadcast manuring, to apply to the hill some two or three quarts of fine rich manure; then the early rootlets of his corn will obtain from it a wholesome food, instead of a poisonous one.

Lime, applied to these "iron soils," will change their quality; as it will combine with the acid, forming the almost insoluble sulphate of lime (gypsum.) The iron will be set free, as peroxide of iron, and will prove nearly harmless; as it is insoluble in pure water. Where we have freely used lime on such soils, it has destroyed their acidity; and clover and herds grass have succeeded well for several years; and when these have disappeared, they have been followed by the close-swarded, tough-rooted June grass,—nearly, or quite identical, with the Kentucky blue grass,—instead of the almost worthless white top or wire grass. The above is fact, there's no theory about it.

In some other soils, there is a different and very injurious salt of iron—the prot-oxide,—a soluble salt. The decomposition and resultant of "brimstone rocks," exposed to the action of the atmosphere, and the same kind of rock, beneath the surface of ground, are quite different.

The process by which the rocks (above the surface of the ground) containing sulphur and iron, are converted into copperas has been described; but the same kind of rock, beneath the surface, is decomposed by the action of the oxygen of water. Water, in contact with the sulphuret of iron is decomposed—its oxygen combining with the iron; the result is the prot-oxide of iron—a soluble salt. The hydrogen of the water combines
with the sulphur, and the result of this is dydro sulphuric acid, or sulphuretted hydrogen.

We frequently see small pools of water, that have oozed from the base of hills in the summer season, covered with a reddish or variagated scum or pellicle, formed upon the surface of the water. This is prot-oxide of iron in solution (iron dissolved in water.) Its affinity for more oxygen is so strong, that it rises to the surface, and extracts from the atmosphere another equivalent of oxygen, and by this process is changed to the per-oxide, it then sinks to the bottom of the water, coating the pebbles, sticks or soil with a cinnamon-colored sediment of insoluble per-oxide of iron;—that is, it is insoluble in pure water; but both oxides are soluble in water containing acids. The first, or prot-oxide, however, dissolves in much greater quantity in the same weight of water; and it is the compounds of this oxide, which are frequently so largely present in the soil in wet and boggy land, and prove so injurious to vegetation. When it accumulates in ponds, it is termed hydrate, or bog-iron-ore.

The only permanent way these “iron soils,” can be improved, (whether profitably, or not, is another question) when the soil is poisoned, by the sulphate (or prot-oxide) of iron, or is underlaid by a hard, iron cemented crust, of greater or less thickness, is by thorough underdraining, sub-soil ploughing, liming and manuring. As the sulphate and prot-oxide are soluble, they will in time pass off with the water through the drains; the lime will soon render them less injurious; and under such a course of treatment, these now unproductive lands will become valuable for agricultural purposes.

We are aware that many farmers do not fully understand the meaning of the oxides of iron, we will attempt to render it plain.

Thus, one hundred pounds of pure iron contains just that amount of metallic iron, without alloy or rust. In one hundred pounds of prot-oxide of iron, there are seventy-seven pounds of iron combined with twenty-three of oxygen gas. The black scales, that split from the heated iron on the smith's anvil, is the prot-oxide of iron, and is soluble in pure water. But upon exposure to the action of the air and moisture, it will imbibe another equivalent of oxygen, and becomes per-oxide. In one hundred
pounds of this, there are sixty-nine pounds of iron, combined with thirty-one pounds of oxygen gas, and this is the common red rust on iron, and is not soluble in pure water. There are many exceedingly fertile soils, that contain a large per centage of per-oxide of iron; but from its insolubility, it is not injurious, in an agricultural point of view—but, otherwise; as it possesses the quality of condensing and retaining the salts and gases of manure, with the gripe of a miser, till required for the use of the growing plants.

LEVI BARTLETT.

Warner, N. H., Dec. 1853

NEVER TOO LATE TO LEARN.

Whatever opportunities for sneers and expressions of contempt the comparative insignificance of our New York Exhibition might have afforded to our trans-Atlantic brethren, it has been fruitful of knowledge to them in one particular. It has served to awaken in them a conviction that our mechanics and operatives are immeasurably ahead of theirs in intelligence; and that unless they can establish a school system similar to ours, their country is destined to be left in the back-ground more and more each year.—Cincinnati Columbian.

In a recent speech delivered by Mr. Cobden, we find the following passages. They are worth reading, for their suggestiveness:—

When I came through Manchester, the other day, I found many of the most influential manufacturing capitalists talking very gravely upon a report which had reached them from a gentleman, who was selected by the government to go out to America, to make a report upon the Great Exhibition in New York. That gentleman was one of the most eminent of the mechanics and machine-makers of Manchester, employing a very large number of work-people, renowned for the quality of his productions, and well known in the scientific world, and whose scientific attainments were appreciated from the astronomer royal downwards.
He has been over to New York to report upon the progress of mechanics and mechanical arts in the United States. Well, he has returned. No report from him to the government has as yet been published, nor what he has to say specifically upon the subject, until that report has been so made and published to the country. But it has oozed out in Manchester, among his neighbors, that he has found in America a degree of intelligence among the manufacturing operatives, and a state of things in the mechanical arts, which has convinced him that if we are to hold our own — if we are not to fall back in the rear in the race of nations — we must educate our people, so as to put them upon a level with the more educated artisans of the United States.

But why should America be better educated than England? Do you think that a new country, which has the wilderness to cultivate, primeval forests to level, roads to make, and every bridge and church to erect — do you think that such a country is in a position to rival an old country, if that country will only do its duty to its people? No, an old country has greater advantages and facilities at command than a new one; and if you find a new country beating an old one in this matter, depend upon it, it is because of some fault in the old one.

If we see the Americans beating us in their spinning jennies, and their sailing boats, we adopt their improvements; if they send over a yacht which beats ours, we send over and build one which will beat them; if a man comes over and picks our locks, we may wonder how it is he makes better locks than we do, but we buy them. And so it is in other matters of this kind. But on the question of education, they have, in the United States, adopted the system, which we, in this country, have not adopted, except in Scotland to some extent; and what is so natural as that we should follow the same rule in this matter as we do in the manufacture of our machinery for spinning cotton, and in the construction of our ships. I take it that the result being in favor of American education, it proves that they have adopted better means than we have; and if we would rival them, we must not be ashamed to adopt their plan, if better than our own.
GREAT FLOURING MILLS.

Both in England and the United States, great exertions have been made in the last fifteen years, to improve flouring mills and make them produce the largest amount of flour in a given time.

It seems that a celebrated "Conical" mill was exhibited at the World's Fair, in London, which was afterwards examined by a Committee of Parliament, and a number of scientific gentlemen, and pronounced to be a wonder of its kind. Two of these conical mills were put up in an establishment, alongside of two old-fashioned flat mills, and the following is given in an English paper, as a result of the trials:

There were three trials as regarded the old system and the new. The first experiment on the old mill gave a discharge of 16 pounds of flour in five minutes, which was equal to 192 pounds per hour; while upon the patent mill there was a discharge of 38 $\frac{1}{2}$ pounds in five minutes, or 462 pounds per hour. The difference, therefore, on that experiment was against the old system 270 pounds per hour. The second experiment tried was even more favorable as regarded the new system.

Two conical mills worked against two on the flat principle, for one hour, ascertained exactly and with the following results:

Conical mill (No. 1) produced $8\frac{3}{4}$ bushels.

" " (No. 2) $7\frac{3}{4}$ "

Flat mill (No. 1) $3 "$

" " (No. 2) $3 "$

This was regarded as a wonderful achievement, and the scientific Committee declared in their report, that these conical mills must very soon supersede the old flat mills.

Now we are glad to have it in our power to say, that our scientific millers in Pennsylvania have been improving the old flat burrs, so as to make them completely eclipse and throw in the shade these celebrated English conical mills.

Messrs. Wilson & M'Cullough have recently completed a new steam mill in our borough, in which they run 4 $\frac{1}{2}$ feet flat
French burrs, two hundred revolutions a minute, that turn out flour faster than we ever saw it run from a mill spout. These gentlemen calculate to grind regularly from six to seven barrels of extra flour per hour, on each run of stones, and they may be able to do more. As high as thirty bushels of wheat have been ground on one run of stones, in this mill, in an hour! We ask if this has ever been beaten any where? If any one has beaten it, they will please send us word.

We have been using the flour made at these mills, for the last two weeks; and find it superior to any we have ever had.—Harrisburg Union.

---

**THE AMERICAN REAPERS AND MOWERS.**

The Exhibition of the Industry of all Nations, at London, in 1851, first called general attention to the subject of reaping by machinery; and now the wonder is that machinery had not long ago superseded manual labor, in the cutting of grass and grain crops. The obvious reason for the delay in its introduction into the harvest fields, as into the cotton mills, is, that in England,—a great grain-growing country, where the farmers and mechanics are intelligent, and whence we should first expect such an improvement,—laborers have been too plenty, and the wages of reapers too low to call very loudly for such a labor-saving implement; while in the United States the ingenuity of our mechanics has not, because of the faint demand in that direction, been long employed in the service of agriculture.

So little were reapers generally known in England,—and even the reel for pressing the grain toward the cutter, which has been deemed a theft from English ingenuity,—that the London Times, whose contributors on every subject are men fully posted up, ridiculed the contrivance, as "a cross between an Astley's chariot and a flying machine."

Almost the first welcome report from that exhibition that came
to American ears, was the triumph of the McCormick Reaper. Now the press is burdened with arguments to prove priority of invention; and thousands of machines are annually constructed.

The attempt on the part of the friends and fellow-countrymen of Rev. P. Bell, to prove him to be the original inventor of the reaping-machine, is simply absurd. For, in the first place, many partially (or we might say, equally) successful machines preceded his, by many years. In 1812, Mr. Smith, of Deanston, brought forward a reaping-machine, which worked satisfactorily at a trial before the Highland Agricultural Society. Several others followed; but all were laid aside, after a few years of trial. In 1822, Rev. Patrick Bell constructed a reaping-machine, of such apparent merit, that the Highland Agricultural Society awarded him £50 for its invention, but this soon shared the fate of its fellows, and became a home for spiders. In 1851, the success of McCormick's machine awakened the envy of our trans-atlantic brethren, and Bell's dust-coated implement was brought out, improved upon, and produced as the original, and, by and by, as the only successful reaper.

That Bell's Reaper had not, heretofore, been considered a successful invention, is proved by the fact, that not above a dozen of them were ever constructed, and of these some were never used (we believe;) others had casual trials for a year or two; and, finally, Mr. Bell's own became the sole survivor, and had use, if at all, only on his own, or his brother's premises.

It is, further, worthy of notice, that in order to enable Mr. Bell's exhumed machine to compete at all with the McCormick Reaper, his manufacturers advised and induced him to abandon one of the most essential parts of his invention, namely, the series of shears, or scissors, by which the cutting was intended to be performed, and to substitute the patented cutting apparatus, or sickle, of McCormick.

If the American Reapers are not original inventions, the question is, from whom were they purloined? Not from Smith, of Deanston, for he used "a revolving cutter, five feet in diameter, composed of thin steel segments, bolted on an iron ring." Nor is it claimed that Scott of Ormistoun, or Mann of Raby, who
invented reapers,—the one, in 1822, the other, in 1815,—furnished the happy thought. Nor, to our surprise, is Mr. Bell now claimed to be the original inventor for Mr. Crosskill, one of the manufacturers of Bell's implements, himself says, in a paper read before the "British Association for the Advancement of Science," that "this (Bell's) machine is different from both the Americans." But we are told that, in 1822, a Mr. Ogle, of Remington, invented a reaping machine, which is almost in every particular the same as McCormick's. We have never seen the drawings, or a description, of Mr. Ogle's machine; but we may, nevertheless, take upon ourselves to say that, in one important particular, if in no others, they differed widely; in this, to wit, that McCormick's machine works successfully, and is in great demand, while only one of the other was ever made, and this was not thought worthy of preservation.

There is no doubt that several persons in England narrowly escaped inventing a successful reaper; and of these, Mr. Bell, perhaps, made the nearest approach. So, also, many men caused boats to move upon the waters by the power of steam; but it was, none the less, left to Robert Fulton, of New York, to make the first practically successful application of steam power to the propulsion of vessels.

We have now given a hasty glance, (and we regret that the cry of a hungry press for copy, has forced us to make it a hasty glance,) at the claims to originality of the American Reapers, or rather, of that one of the American Reapers, which, for having been successful at the exhibition in England, has been the most assailed. Our next purpose, in this paper, is to give a description of a few of the most esteemed implements, with a statement of what the inventors claim for each, and to recommend their use to our large farmers. Not feeling called upon,—or indeed, with our present limited knowledge of some of the machines, competent—to decide which, if any one, is on the whole the best; we content ourselves with furnishing the proprietors' description of the advantages of each.

The first machine (in alphabetical order) is Atkins' Automaton, or Self-Raking Reaper and Mower.
Mr. Jearum Atkins is a mill-wright by trade, and as this invention testifies, an original and remarkable mechanical genius. About ten years ago he had the misfortune to be injured by a fall, and since has been almost wholly confined to his bed, being unable even to sit up more than two or three minutes at a time. Three or four years ago, a reaper was brought into his neighborhood, and an opportunity was given him to examine it from his bed for a few minutes. A farmer present, knowing his inventive skill, remarked to him that if he "would only attach a raker to it, he would make his fortune." The remark awakened his thought and determination. Various plans were successively formed and abandoned without trial, farther than a small model; till, last winter a year, he struck upon a wholly new arrangement. Though so curious a movement, and altogether new, yet so clear and definite did he form the plan in his mind, that he ascertained by mathematical calculation, before making any part of his model, the size, movement, and effect of each separate piece, and then made one part after another of his model according to his figures, put the separate pieces together, and the whole movement was effected exactly as calculated, even to a little rise in the rake as it is drawn across the platform. That model has not been altered, and the full sized machine is, almost precisely, the model enlarged.

Considering the novel and complicated motions, yet perfect simplicity and small number of pieces by which they are produced, it shows a very high order of mechanical talent to have at once perfected such a machine, and in such a manner. Most inventors, it is believed, get some parts to work right in a model, and then plan and add another and another; but the whole plan of this Self-Raker was entirely formed in the inventor's mind before a single piece of wood or metal for his model was touched.

Seldom is it that an invention, involving anything like the novelty and complicated movement of this, is at once, and so successfully, introduced into practical use, even when the inventor has the benefit of much experience in the branch of industry for which he is laboring; yet so thoroughly had Mr. Atkins studied
out all the difficulties to be obviated, that though he had never seen a reaper but once, and then not at work—notwithstanding he knew nothing of grain cutting, having from boyhood been closely devoted to his trade till he became bed-ridden; still, so correct were his views, that where the mechanics deviated from his plans in constructing the machine for trial, it failed, and his wishes had to be followed out in every particular.

The cut gives a very good idea of the form &c., of this machine, and the following letter from Mr. Wright, one of the proprietors of the patent, will show what are the advantages claimed for it.

"Prairie Farmer" Warehouse, Chicago, Dec. 14th, 1853.

Dear Sir:—

I thank you for your polite request to furnish for the Journal of the United States Agricultural Society, a description of Atkins' Automaton Reaper.

It was invented nearly two years ago; and so perfect were Mr. Atkins' plans, that the model he first built with his own hands, was simply enlarged for the full sized machine; only one of which was built in time for last year's harvest. This year about forty have been in use in Illinois, Wisconsin, Iowa, Michigan, Indiana, Ohio, Pennsylvania, Virginia, New York and Canada, and with almost uniformly good success. The difficulties and all the breakages—which are few and unimportant—are fairly given, with its success, in a pamphlet I herewith enclose to you, and which I will send with pleasure to all applicants.

As following up the thorough trials of the harvest field, and fully confirming the almost uniformly favorable opinion of the farmers then expressed, I am happy to state that I have heard of twenty-two first premiums awarded it this autumn, and hope to learn of two or three more.

No reaper, I believe, has ever been brought out, in which farmers, from its start, have had so strong confidence of its practical value; or in the use of which, so little difficulty has been experienced. The little trouble that has been encountered, has been mainly from not knowing how to remove a cross bar over
the platform, which was found to be in the way in very tall grain, — a difficulty that was easily surmounted in several machines (as it might have been in all) by removing the bar, and putting a plank beneath the platform.

I did not recommend the machine for mowing, and do not now, as being equal to one expressly prepared for grass; but you will see in the pamphlet it has been thoroughly tried in grass with good success.

The following are the points of excellency, which I claim for the machine:

It saves the labor of one hand, (the raker,) which is the hardest work of the harvest-field.

The grain is laid so even, that binding is greatly facilitated, some farmers saying that one hand in five, or four, and some even one in three, can be dispensed with, as compared with other reapers.

The careful handling of the grain by the raker, saves a small per cent. over raking by hand.

The main driving wheel is large, being four feet in diameter, with a four-inch felloe, giving steadiness of movement in passing over rough ground, and good support in soft. The grain wheel, too, is two feet in diameter.

The frame-work is well braced and stiff, supported and strengthened with iron wherever necessary.

The gearing is compact and symmetrical, well boxed in and protected from dirt.

The team is relieved of weight and of the side draft by resting the hounds upon a pair of front wheels, making it also very convenient to turn a square corner, as will be learned by a little practice.

The driver's seat is elevated and easy, giving him good command of his team, while at the same time he can watch the operation of the knife, reel, and raker, and if necessary instantly throw the machine out of gear by the lever at his right side.

The height of cutting is regulated by a very simple arrangement, and the knife may be set close to the ground.
The draft is comparatively easy for a pair of horses, and is not perceptibly increased by the raker.

It is impossible to give, in connection with the cut herewith sent, and in any reasonable space, such a description of the movement as would make it understood by one who had not seen the machine. I therefore will not attempt it.

One important cause of its success has been thorough workmanship. This shall be as carefully attended to in the future. I am only trying to build three hundred for next harvest, and may not get out even that number, certainly no more than can be well built.

The reaper is to be manufactured in England, by Messrs. Garrett & Sons, and Messrs. Ransomes & Sims; and to those who know the standing of these two eminent firms, and what they mean when recommending an article, it is sufficient evidence as to the English opinion of it, that Mr. Garrett writes me, after satisfactory trial, that he shall not hesitate to recommend it. Patents for it are also secured on the continent of Europe.

Truly yours,

J. S. WRIGHT.

W. S. King, Esq.
Editor Journal of United States Agricultural Society

The next, in the order of arrangement adopted, is

BURRALL'S CONVERTIBLE REAPER.

Figure 1 presents the machine complete for side raking. The raker is seated on the platform opposite to the main wheel, with a rake having a head extending nearly across the plat-
form, with an arm or handle about four feet long, secured to the head near the centre, and rising at an angle of about thirty degrees, with which, by an easy quarter-turn, the grain is gently swept to the side, and laid in even gavels behind the wheel at right angles to the track.

Figure 2. The platform for raking off in rear, the apron being removed.

Figure 3. The apron detached, when used for side raking, is secured by bolting the arms to the platform at \( a, b, c \), as seen between 2 and 3.

This implement received the first premium at the Trial of Farm Implements at Geneva, New York, in July 1852, held by a Committee of the New York State Agricultural Society. In speaking of this Reaper, the Committee in their report remark: "Mr. T. D. Burrall's machine performed its work in the most admirable manner; the gavels were well laid; the workmanship and materials excellent; the circular apron for side delivery; the balance wheel, and an arrangement to elevate the exterior edge of the apron, are valuable features." And in a note, they add that in nearly all the Reapers presented for trial, a decided improvement was exhibited; there was a finish in many which may be viewed generally as a proof of durability; a symmetry of form, and beautiful correspondence of various parts were observable in the best machines; this last remark is most justly due to Mr. Burrall's, for his is peculiarly compact and
strong, with few parts, all admirably combined and adapted to their uses.

It is called a Convertible Reaper, because it is made to discharge the grain in the rear, or at the side. This change is desirable—because if the grain is fit to be bound when cut, it will be done in less time when laid in the rear, than at the side. Every farmer understands that rakers following the cradle exert themselves to keep up; but if once left behind, they continue to fall back more and more.

So with the reaper—when discharged in the rear, the grain must be removed before the team can pass again, and the laborers exert themselves more actively to keep out of the way; but when unfit to be bound, or help is not at hand, the grain must be laid so far aside as to let the team pass again, without treading on it.

In these cases side raking becomes indispensable. This is done by means of an extra apron, (attached in a moment) over which the grain is swept, by an easy quarter-turn of the rake, and laid in gavels at the side, directly behind the wheel, and at right angles to the track, leaving the grain in fine order for binding, without the use of a rake. This is done with a neatness and precision that have never been reached by any other machine; and constitutes almost the perfection of raking.

In cutting Buckwheat, Peas, Timothy and Clover seed, (not requiring to be bound,) it leaves its work in parcels at the side, ready to be taken up, without waste by raking.

Mr. Burrall has also invented a Grass-cutter, of which we give below a cut and description.

**Burrall's Grass-Cutter.**

The frame of this implement is all of iron. The driver is seated in the rear of the main or driving wheel, with his work in view before him, his seat covering a tool chest. A lever, (the handle of which is seen at A) within his reach, serves to throw the cutter out of gear at pleasure. The caster wheel (in front of the main wheel D) keeps the cutter at a uniform height on uneven surfaces. When the gauge-wheel passes a slope, or water-
furrow, as at C, fig. D, the cutter dips and rises with it, following the dotted line, and then cuts as closely in the furrow as on level ground.

Figure D.

The pole to which the team is attached, plays free like a sleigh-tongue, and is so adjusted, that aided by the guage-wheel, it avoids all side draft. The cutter-bar is protected by a guard in front, and relieved from side strain by the direct action of the connecting rod—the knives have a reversed cut above the bar, and the guards are open below, which prevent all clogging—the dividing-shoe, at the outer end of the Cutter, has a jointed sole, by means of which that end of the cutter is raised or depressed. The height of the other end is regulated by the guage-wheel, and it has a balance-wheel to correct the irregularity of the crank movement—the gearings and all the working parts are convenient for oiling and adjusting—the whole forms a strong and compact machine, in a neat and simple form, entirely new in all its combinations, and comprising every requisite for a perfect Grass Cutter. Price $100 to $110. Made and Sold by Thomas D. Burrall, Geneva, Ontario County, New York, (warranted to be thoroughly built, and to work well.)
Ketchum’s Mowing Machine has also acquired celebrity by its successful operation. A good idea of its appearance may be obtained from the cut on the opposite page; and the subjoined statement of Messrs. Howard & Co., the proprietors and manufacturers, will show what is claimed for it.

This machine is a **perfect** grass cutter; can cut all kinds of grass successfully; and works on quite uneven ground, by the advantage of placing the knives on a line with the shaft, or tread, of main wheel; which advantage we have secured to us. The open or hollow cutting tooth completely prevents all clogging. This we also have secured, by letters patent; as well as several other points, which we deem very essential to a successful Mowing Machine. We have made improvements on our machine since last season; which give us the utmost confidence that they will give entire satisfaction. We sold eleven hundred last season, and could have sold many more, could we have built them in time. We shall build about four thousand for the harvest of 1854, and have no doubt of selling all of them. We intend building a small one horse machine which will cut from five to six acres per day with ease, and put the price within the reach of all small farmers.

We have been to every trial this season of mowers, and not in a single instance have we failed to cut our allotment in the most satisfactory manner. Our machine has taken six first premiums the past season; and we say, boldly, that we now have the only successful Grass Cutting Machine in the world, and now known.

Few Americans will soon forget the general mortification which pervaded the country, when the first notices of the American Department in the London Exhibition were received. The English press was facetious upon the subject; the salaried letter-writers for the American journals were magnificent in their scorn; and our fellow citizens, temporarily resident in London, everywhere expressed their regret that we had contributed at all, when we were sure to show to so great disadvantage. About the first light that broke through the cloud of gloom, was the report of the trial of Reapers; and the fortunate implement that
first attracted honorable attention to the useful character of the American Contributions, became, at once, noted throughout the country; and every one felt a debt of personal obligation to the successful inventor. This implement was McCormick’s Reaper.

In answer to our request, Mr. McCormick has furnished the following account of his machine:

Chicago, Ill., January 12, 1854.

I very cheerfully comply with your request, to forward you a description of my Reaping and Mowing machine "as correct and concise" as I can. And in the first place I beg to refer you to the "Reports of the Juries" of the great exhibition at London, in 1851, for some extracts from a similar statement to the one you wish, made at the request of the Hon. Philip Pusey, M. P., as chairman of the Committee on Agricultural Implements, which may answer your purpose, as far as it goes.

[In consequence of the late hour at which Mr. McCormick’s statement was received,—while the press is waiting for this very article—it is impossible to obtain and insert the extract alluded to. The report of the jury, however, with the statement of facts, is too generally known, to make the omission at all important. Ed.]

I think I need only add, to the English account referred to, that my Reaper was further improved, as patented in 1847, by the arrangement for carrying the man on it, so placed and secured as to discharge the grain from it, at the side of the machine, in gavels of suitable size for being bound into sheaves. And that, subsequent to that patent, I have made such further improvements as to make it a complete combined machine for reaping grain, and mowing grass; the latter of which operations, it seems, has not been noticed by the juries of the New York Crystal Palace Exhibition; for the reason, I suppose, that the mowing addition was not attached to the machine, and was therefore overlooked; neither myself nor any agent of mine having attended that exhibition, from the 6th of August (last) when I sailed for England, to the time of its close, for the reason that, when I left the country, I was told by one of the managers or conductors of the exhibition, that, as from the then lateness of the season, there
could be no trial of the Reapers and Mowers, there would be no premiums awarded for that class of implements.

The reports and awards of this exhibition have not yet been published, but it will be observed from the foregoing facts and circumstances, that my machine had not the requisite attention—no attention, indeed—to bring its points and excellencies properly before the judges or juries of the exhibition.

I am sir, very respectfully yours,

C. H. McCormick.

Wm. S. King, Esq., Editor, &c.

There are many other Reaping and Mowing Machines, that have their excellencies; but not knowing the address of the proprietors or inventors, we could not easily procure descriptions of them.

The economy of a mowing machine, (and of course the economy of a grain reaper may be calculated in some manner,) is thus forcibly illustrated by the Committee of Judges at the Trial of Farm Implements at Geneva:—

An able man can cut with a scythe an area of one acre and a quarter each day, on a meadow covered with grass equal to two tons per acre; of heavy clover he will cut not to exceed one acre per day; a few men can accomplish more than above stated, but on an average these quantities are found to be a full day's work.

The rate of wages varies in different places and counties, yet a fair average rate of compensation in central New York for men engaged in the hay harvest is seventy-five cents per day, or eighty cents per acre by the job, with their board and lodging.

Assuming the cost of cutting and making hay at one dollar per day for each man employed, we may approximate closely to the advantages of mowing machines. Thus

One acre of meadow grass yielding two tons will cost

for cutting and making the hay 2 00

A field of ten acres will therefore cost 20 00

A mowing machine will cut an acre per hour, worked by one man with two horses; a field of ten acres may be conveniently cut in one day by the machine; three additional laborers will be
sufficient and ample for turning, raking and cocking the ten acres.

Then the labor of four men is equal to $4 00
One team, say. 1 50
Interest on cost of the machine, wear and tear, say
fifteen per cent per. annum, to sink the cost in ten
years $15; this amount divided equally to ten
harvest days is equal to a daily share of 1 50
Cost of cutting and making ten acres of hay, of two tons
per acre, by a machine, $7 00

The difference in favor of the Mowing Machine is therefore a
tsaving of labor equal in value to thirteen dollars per day, and
upon every ten acres of grass land, the gain upon each ton is
sixty-five cents.

Large sales of each and all of these implements are annually
made, restricted only by the ability of manufacturers to fill
orders; and we trust that the patronage thus so liberally bestow-
ed, will encourage Genius more often to give its aid to Agricul-
ture.

AMERICAN COMPETITION WITH ENGLAND.

A writer, to whose compilations the Times gives space and
a conspicuous position, has taken more than one opportunity of
enlarging upon a competition with which our merchants are
threatened in India and Asia on the part of American traders.
The ships of the United States appear on the Mekran coast, as
well as at Kutch, Muscat and other places, with various articles
which they barter for the produce of those countries; the Amer-
ican commodities being principally a certain coarse cotton fabric,
(which they call sheeting,) and dollars. The Americans appear to
enjoy a particular advantage over our traders — that of conduct-
ing their barter individually; in ships, which are independent,
pushing shops; instead of working by routine through large es-
tablishments at Bombay; and thus they not only save expense, but in each particular transaction, secure the largest amount of profit.

Another advantage they have is expressed by the political agent at Kutch, who says of the sheeting, that it finds acceptance among the people of the country, because it lasts longer than cloths imported from Bombay.

This indicates the true force of the competition which we have to dread from the United States. If America can cut us out in India, where we occupy the entire country with our Government and commerce, the ridicule and the disgrace would be greater than any which the most anti-commercial country has incurred.

But there is something in this superiority of tissue over the manufactures in England. The comparison is not made for the first time, nor only in cotton sheeting. It is reported from the Hudson River Railway, that British iron rails become in a worse condition within twelve months, than American rails within a number of years. There may be exaggeration in this; but we have heard complaints of our rails from our own official and scientific investigators, who have declared the bad make of our iron to be a frequent source of accident. At the last meeting of the Sheffield Cutlers, the master cutter declared that American Cutlers were cutting them out in knives; knives of American make being preferred to ours, because the material does not give way under use, as those of Sheffield are sometimes found to do. In short, notwithstanding the short practice and hasty habits of Americans, they are in some branches of trade earning the repute for sterling stuff and make, which used to be our own; and if we suffer them to win that reputation from us altogether, then indeed we shall have lost more than if India were annexed tomorrow.—London Examiner.

American Forest Trees.—In North America we have fifty species of the oak, while all Europe has only thirty species. North America has forty species of pines and firs, the United States over twenty, while Europe has but fourteen species.
NEW AMERICAN THRASHING MACHINE.

Some time ago our New York correspondent, referring to a few of the more remarkable contributions to the American Exhibition, noticed with especial commendation an improved thrashing machine, or, as it is called on that side of the Atlantic, "grain separator." This implement, which was patented in 1852 by its inventor, Mr. Moffit, of Cincinnati, has now been brought over to this country, and yesterday (Monday), Mr. Mechi subjected it to a public trial at Tiptree. Its performance well entitles it to the attention of agriculturists, and we have no hesitation in saying that it is a valuable accession to the stock of those mechanical inventions by which the business of the farmer has of late years been benefitted so largely. The machine, which is portable, weighs only fourteen hundred, thrashes easily and without waste at the rate of one bushel in forty seconds turns out the grain; perfectly clean and ready for market, and is manufactured in America at a cost price of £23. It is thus about twice as light in draught as the lightest of our machines of the same description, does as much if not more work than the best of them, and with much less power; dresses the grain, which they do not; and can be profitably disposed of at one-half, or at least-one third less money than our implement-makers charge. Among the distinguished features of Mr. Moffit's patent may be noticed, that in thrashing damp or wet grain he avoids "wrapping" or "choking," by using an ingenious open straw carrier of wooden rods, connected by iron links, and driven by a cog-wheel, and that for cleaning the grain he has introduced a peculiar riddle, in which straws cannot lodge; a wire rolling screw, through which grass, seeds, and other impurities fall; and a conveyor for carrying back the tailings. To push along the grain he employs the Archimedean screw, much in the same manner as in the flour-mills of this country. The drum was yesterday (Monday) driven by a six-horse portable engine of Ransome's, at about 1200 revolutions per minute; and, with that speed, the proportion of broken kernels was exceedingly small. The bars of the drum are arm-
ed with numerous wrought-iron teeth, which break the straw much more than we in this country consider desirable. Another objection taken to the machine is, that it does not give off the straw and the chaff separately in the most convenient and economical form. Taken altogether, however, this "separator" is a highly creditable specimen of the mechanical ingenuity of our cousins. The American reaping machines found their way to Mr. Mechi's wheat crops, as if instinctively, in 1851. The American thrashing machine comes now, and we are promised at no distant date a steam cultivator, the invention of an American, which is to deprive agriculture of her motto, and render it no longer necessary to "speed the plough."—Times.

ADDRESS OF FRANCIS P. BLAIR, ESQ.

We have received and read with great pleasure, the excellent Address delivered before the Agricultural Association of Montgomery County, Maryland, at their late fair in Rockville, by Francis P. Blair; and as the tendency of his remarks is in the direction favored by many prominent members of this Society, we have thought it not unprofitable to extract largely from it.

The Address commences with the expression of his regret that the appointed orator of the occasion (Hon. Andrew Stevenson) had been compelled to relinquish his engagement; and that himself, a man town-born and town-bred, though a lover of agricultural pursuits and, late in life, a farmer—should have been substituted.

The want of a fully organized, well exhibited system for the promotion of agricultural improvements, extending its influence over the whole country, is indicated, he thinks, by the operation of the voluntary associations, now existing.

"England and France," says Mr. Blair, "have preceded us in establishing institutions conforming to the genius of their governments, to promote the arts and sciences—not omitting the science and art of agriculture, which most vitally affects the popular masses. One would expect to find this last less the con-
cern of Kings than it would be of the representative government in this country of democratic rule. But it is not so. France and England have not only their national institutions, royal societies, and museums to promote philosophy, literature, and art, but they have national boards of agriculture, and admirable schools of instruction, with model farms attached, where every science, every trade conducive to facilitate the farmer's success, is taught, as well as the necessary practical skill in every department of husbandry itself. Nothing is omitted in these schools which contributes to perfect the learner in knowledge of the soil, and every modern melioration which ages have brought, or which modern experiment has recommended; and no species of economy and management calculated to adorn or render profitable a farm in all the various sorts of cultivation of which it is susceptible, is unprovided for in the practical course of instruction through which the students pass on the model farms attached to the great agricultural schools or boards of Europe, especially of France. The French establishment of this sort at Grignon was once a royal seat, not far from Paris, embracing one thousand two hundred acres, which was ceded on a lease of years by Charles the Tenth to a society of gentlemen so be converted into an agricultural school, and it became the most perfect of any in the world. The government was represented in the management of the estate. A superintendent and professors (who received salaries derived from the product of the estate, and from fees of paying students) provide the instruction by lectures and by practical teaching in the fields and workshops. And so prosperous have been the results of late years, that the profits have exceeded the current expenditures and the rents paid on the lease of the land to the government, and enabled it to extend its advantages to many free pupils. In England, Scotland, and Ireland there are similar institutions, and they are looked upon as contributing greatly to that advancement of agriculture, both as an art and science, which has marked so signally its modern progress.

While our country has outstripped the nations of the Old World in every other species of useful progress—has advanced
far ahead of them in the science and administration of government—has taken the lead in the most useful inventions and manufactures—has surpassed all rivals in the art of navigation and commercial activity on every ocean—why is it that its labors on land, though connected with characteristic energy, and in regions of virgin fertility cannot bear comparison with that of many of the States of Europe? We want the science, the system and skill, taught in schools, to give direction to that energy of mind and body among our countrymen which accomplishes so much without their aid, and with it would make the superior cultivation of the soil their greatest triumph. We have self-taught men in every pursuit, and among them some eminent men; but education, which brings to the assistance of an isolated individual the experience of past ages and the strength of a multitude of men exerting all their faculties in concert to promote his efforts to master the most complicated and vast pursuit in which he can engage, is certainly the first thing to be sought. It is sought as preparation for all the secondary employments of life which look to show and finish for success; why should it not be so for the first and greatest?"

The utility of an agricultural school and experimental farm near Washington, is admitted; but the orator appears to think, with others, while he regrets, that there are constitutional objections to it, which do not as well apply to the military and naval schools. That Government has neglected agriculture is asserted; but, says Mr. Blair, "Congress sensible of this Government neglect of the agricultural interests, has of late years attempted something in its favor through the Patent Office, converting it into a sort of agricultural bureau, scattering seeds through the post office, and publishing a book containing a mass of heterogeneous recipes and scraps from newspapers and other periodicals on agricultural subjects, gathered by the superintendent in the leisure left from his appropriate duties. This ephemeral publication, scattered, like the seeds from the Patent Office, at random over the Union, has cost the Treasury about $100,000 annually. How poorly does this well-meant and not ill-received attempt compare in economy and usefulness with the admirable
schools of Europe — their lectures and model farms — turning out multitudes of thoroughly-taught practical young farmers, living exemplars to carry improvement into the various regions to which they belong, and to show the results of the most perfect scientific experiments conducted by adepts in science and art — proved in the field after having been taught and subjected to the tests of the class-rooms and elaborated in machine shops? The information spread abroad by these institutions, is not mere book farming. The young men educated in them, like the soldiers of the polytechnic schools, graduate from the ranks, and pass through every species of manual labor necessary to perfect a man in the cultivation of a farm, or to manage the machines, animals, or the laborers employed upon it; and to this is added the mental and moral instruction fitted to elevate the student from the administration of the affairs of an estate to the administration of the affairs of a nation! Under the economy of several of these establishments, the productive industry of the student is adequate to the expense of his education; and in the most admirable of all, that of Grignon, near Paris, the cost to the students resident within the establishment, is only $135 per annum, while the instruction is made free to a multitude resident in the neighborhood, boarding at cheaper rates."

Conceding (for the sake of the argument) the want of authority in our Government, to create an establishment similar to that at Grignon, Mr. Blair contends that part of the fund of the Smithsonian Institution, might with propriety, be applied to "the diffusion of agricultural knowledge among men."

"Cannot this gifted scholar, (Prof. Henry) who was for years the light of Princeton College, and who ranks with the first chemists of the world, be placed, with the institution to which he has dedicated his life, in connection with the vast landed concern of this continent, to which his scientific labors would contribute so much, in giving a proper direction and powerful impulse? Aided with the resources of learning and talent which the Smithsonian Institution can command, and the establishment of an experimental farm, upon the plan of Grignon, under the superintendency of some such profound philosopher, practi
cal teacher, and farmer as Benjamin Hallowell; agricultural instruction would attain a new and most propitious epoch in the history of its progress. At the seat of the government for the whole Union — open to a number of pupils from all the States according with the ratio of representation — subject to the inspection of the higher functionaries of the Government and the representatives of the States and people — deriving from them a knowledge of the wants and expectations of the country, and reporting to them every advance made in their labors, and obtaining through their instrumentality the means of communicating successful results to every section and almost every individual of the Republic; the system of education, meant to instruct its growing youth would also instruct the nation itself through the channels from which its political information flows."

The advantages of the location of an agricultural school at Washington, and the interest taken therein, by the Father of his Country, are fully set forth.

"The idea," says Mr. Blair, "which I have endeavored to impress has recently been again and again broached in one form or another in the public press, in public meetings, and in the halls of Congress. The popular sentiment which has stimulated Congress to appropriate hundreds of thousands to the purpose of disseminating agricultural information in the crude, undigested heap contained in the Patent Office report will, I trust, justify me in bringing forward the suggestions which have been made in various quarters, looking to some well digested, organized plan to accomplish what is now evidently the public will, and what, in advance, had the sanction of the great mind of the founder of the Republic at the close of his illustrious career.

After some sound remarks upon the agriculture of Maryland; and the superiority of the value of the Indian Corn crop, and of our beef fattened thereon over the turnip and oil-cake fed beef of England; the orator turns to a comparison of city and country life.

"Men who have made fortunes in our cities begin now to appreciate the value of country life, however averse or unsuited to it they may have been rendered by habit. The common guide-
book of Paris, which is put into every traveller's hand, has this note under the head of population: "Families constantly residing in Paris soon become extinct. The effects of this mortality are observed to be more active upon males than females." What is true of Paris is true of every city in the world. There is not probably a man in London, Paris, New York, or Philadelphia, who can say that his great grandfather, his grandfather, and his father, successively lived and died in the city of his residence. There is no such thing as a survivor of three generations that have undergone the decomposing power of a city atmosphere, assisted by city pursuits. A city, then, may be said to die out once in a hundred and fifty years, so far as regards those rooted generations that live, and move, and have their being only within a city's precincts. Whoever, then, would have succession in his family—that desires to transmit his name and wealth by perpetuating his race—should at some period of his life take his leave of walls and pavements and crowded thoroughfares, and fix his abode in the midst of rustling foliage green fields, clear streams, and sweet air, untainted by stagnation in the walled streets and alleys and sewers.

There is another observation in regard to cities which induces thoughtful men, who take pride in their posterity, to remove from them when they have accomplished the object for which they were sought. How many millions of children educated in cities with the utmost care have passed away without reaching distinction among their countrymen! It is remarkable that children born and bred in cities generally exhibit precocious talents; they have the easiest access to every species of learning; they are stimulated to exertion in the schools by the number of competitors, and by that parental pride, vigilance, and solicitude which is spirited up by the stirring society around; they have the advantage of imb...
country or in the liberal professions are country born and bred. The hot-beds of cities bring forward their plants more rapidly; but those springing from the native soil, and braving the rude seasons and rough culture of the country, are found to have the best stamina. Look over the list of great men who figured in our revolution, and it will be found that almost to a man they were country-born and bred. Search the annals of the revolution in England from the reign of the first Charles to the third William. These were times that tried the souls of men in the mother country. Scarce a name appears that does not owe its celebrity to faculties grown in the country. The French revolution filled Paris with innumerable great men, the offspring of the provinces. If we scan our own quiet times, whence come the illustrious men who have filled the chief magistracy, and given fame to Congress and our State Legislatures? I do not know one who has not made his way from some rural district to the high places of the Republic. And so, too, it has been with our great merchants and mechanics who have flourished in cities. Trace them and you will find that the impulse that gives them this lead brought them from the fields or some village to try their fortunes in the city. The men who thus build themselves up in the marts of business have generally the sagacity to see that life in the country is the natural state—that in the city an artificial existence; and if not too much possessed with the spirit of getting, which gain is too apt to engender, they retire to the scene from which they emerged. This is particularly marked in public men, who almost invariably seek to close their career at some homestead which they would make their monument. From this feeling we have our Mount Vernon, Monticello, Montpelier, Ashland, Fort Hill, Marshfield, Lindenwald, and the Hermitage; and how natural the wish with every independent nature to have a home—a little domain where its offspring may have space to grow to full stature, where the moral character may be formed on its cherished principles, where the age and infirmity of the declining head may have the required privacy and repose, and where the prospect of the grave itself is softened by the sense that it would often be viewed by fond and kindred eyes! The
idea of a hereditary patriarchal home brings a thousand endearing associations with it both to parents and children, and the affections which grow up in it become a part of it. A sense of this makes the possessor labor to improve it—to impress his own character upon it—to adorn it with taste—to enrich it with fruit, and to hand down his memory in every permanent edifice he may build, and every noble tree he may plant; and, with the consciousness that he will be blended in the thoughts of his children, who are to succeed him in the enjoyment of the blessings he thus prepares for them, he will seem to enjoy them himself through a long futurity."

We regret that the late hour at which this address was received, and the demands upon our time have caused this notice of a most excellent address to be so hurried; and that the little space now left unprovided for in this number, has prevented our copying it entire.

ILLINOIS STATE AGRICULTURAL SHOW.

WILLIAM S. KING,

My Dear Sir:—Your kind letter, asking for some account of our State Fair, has been delayed by a change in our mail route; and it would be too late, were I to refer your request to our excellent Corresponding Secretary, Bronson Murray;—and if I attempt a brief sketch, it must be from memory alone.

Our State Society is not yet a year old— and the first meeting of the Executive Board took place late in May last. The cause of our tardiness was the virtual impracticability of bringing together at any point in the State, the people and their products, from beyond the immediate region of country in which a Fair might be held. But the rapid extension of our Rail Road system had recently altered the prospect, and to some extent rendered it probable that a considerable portion of the State might easily be represented at the Capital. We accordingly determined to hold a Fair, in the city of Springfield, from the 10th, to the 14th of October; and as we had a fund of $1,000 from the State, we ventured to make our premium list up to $1,500.
Most beautiful and commodious grounds were furnished by a local association, of which our President—James N. Brown—was also presiding officer. In making our calculations and arrangements, our only fears were on the score of transportation—the Rail Roads entering the city, having their connection with the Illinois River, alone complete—and, as the time drew on, it was seen that no dependence could be placed on the timely connection of river boats, with the completed end of the Rail Roads, on account of low waters; and that there was little probability of a connection north,—the direction from which we expected many thousands of visitors, and the greatest variety of articles for exhibition. The event verified our worst fears, to a considerable extent.

Now, with these explanations, which are our just due, I will proceed with my rapid sketch from memory.

All things considered, the attendance was good,—not so many women and children as there ought to have been, in proportion to the men; and yet the number of people, who came to see and to learn, was decidedly encouraging. Our collections, from season tickets alone, was nearly sufficient to meet our expenses; and our receipts from all sources has paid all, and left us a respectable balance in the treasury.

The Cattle.—There were about one hundred entries in this department,—nearly all Short-Horns, and their crosses. Good judges admitted, that in all probability, a better show of this variety of stock was never seen in this country. Central Illinois has long been rated for fine beef cattle, and the Short-Horn and its grades are the true corn-eating and beef-making animals, and this region is their true home. We had no cause to be ashamed of the show of Short-Horns.

Horses.—There were more than twice as many entries in this department,—the long-eared Hybrids and cousins, included—as in that of cattle. Among the numbers, were some sixty or seventy stallions—mostly rather heavy animals, and some beautiful ones. But take the horse show all through, size appeared to be a ruling feature, in the general idea of excellence. And yet, to my notion, the most beautiful and valuable were all "ex-
ceptions to the rule," and the brood mares and colts were fully equal to the sires.

Mules and Jacks were abundant, and kept everybody advised of their whereabouts. They were not overlooked, you may depend. A great region for fine mules is this, of Central Illinois; and our show of them, and their long-cared progenitors could not have been beaten, any where, north of Springfield.

Sheep.—There was no great variety in this department. Still the show of Saxons, and Spanish Merinos was liberal and good,—judging from the opinions of others, for I had little time to examine them. Central Illinois is not, however, our best sheep region.

Swine.—I am no judge, but everybody said the hog show was " hard to beat;"—being great in quantity and variety, and most interesting in the excellence of particular specimens, on exhibition. This superiority is easily explained, and is connected with the great abundance of Short-Horn cattle. Central Illinois is, par excellence, the corn growing region of the Northwest; and, until quite recently, the crop could not be made to pay, except when turned into beef and pork; thus, of course, the best breeds of animals would be sought for, and found, if possible.

Poultry.—The poultry show, for away-out-west, " and down towards Lower Egypt," was quite sufficiently creditable; when it is considered that this, as well as the great Stock Show, was made up from the vicinity of Springfield. There are plenty of all the sub-varieties of the Chinese breeds of chickens; and, indeed, of all breeds, except perhaps of Dorkings. There were also some fine geese, and pretty ducks, and other birds of domestic note.

The Dairy.—I would rather pass over this, in silence; but I wish to be candid and truthful, if nothing else—and so I must say that the Dairy, and indeed, the Farm and the Garden were miserably represented. There was one cheese, and only one; but it was worthy of the diploma and large pile of books which it took, as a premium. There was not a single lot of butter within the rules, though there were some half dozen
samples of fancy table rolls, of good quality; and as the Committee awarded premiums, we paid them; so as not to discourage future scientific competition, in this somewhat important branch of home production.

There were a few lots of very superior wheat, and the neighboring millers showed good samples of flour. But the seed corn, and tall corn, beat all the products in this department.

Vegetables.—Here I would like to skip, again, but telling the whole story may do more good. In the centre of a region, where every field and garden vegetable, named in our large list, may be grown with the utmost ease, and in the greatest perfection, there were but three premiums awarded; and I dare say, only three entries made.

Fruit.—Here we did well again. The quantity of fruit, and the size and beauty of specimens have seldom, if ever, been excelled. But the variety was not great, when compared with Eastern State shows, or with the display on the tables of our North Western Fruit Growers Association: still ours was a great fruit show, and well worthy of the attention it received.

Domestic Manufactures.—We may as well set this department down as a failure and have done with it. The entries were more numerous than in the other departments, which are here placed in this category; but the display was not much more creditable.

Farm Implements, &c., &c.—Large manufacturers, and dealers in these, generally know what they are about, and fully appreciate the value of agricultural shows, and in this department there was a good display;—considering the difficulties of transportation, and other circumstances.

The Address was delivered by Professor J. B. Turner,—a practical agriculturist, and the great western champion of Agricultural Education. In this one feature, we claim a specific advance worthy of general imitation. The custom, requiring an address, is doubtless, a good one. But the almost universal selection of buncombe politicians, or persons belonging to other talking professions, is a reproach and disgrace to the hand-workers of the age, and to agriculture, more particularly. In this, our Society has broken the spell of caste, and established a
precedent, alike just to others, and necessary to the development and maintenance of a specific professional *esprit du Corps* among ourselves.  

J. A. K.

NEW-HAMPSHIRE STATE AGRICULTURAL SHOW.

William S. King Esq.,

*Dear Sir.*—In compliance with your request, I herewith communicate to you the following meagre report of the late Fair of our State Society.

The New Hampshire State Agricultural Society was organized in December, 1849; and in the autumn of the following year, its first Exhibition of Stock and of agricultural and mechanical products was held at Concord. Such was the success of that Fair, and so great has been the interest on the part of the public, in the prosperity of the Society, that Annual Exhibitions have since been liberally sustained.

The fourth exhibition was held during the first week in October, at Manchester, and was attended by more than thirty thousand persons,—a much larger number of people, than was ever before gathered on a similar occasion, in the State. The arrangements for the public accommodation, the due safety and care of their live stock, the favorable exposition of agricultural products, the fabrics of the shops, and the works of art and taste, were far more liberal and satisfactory, then ever previously.

The show of Horses has never before been equalled in the State, either in number, or the perfection of the animals; and would favorably compare with the exhibitions in the horse breeding States of New York and Vermont.

The whole number of entries, in the several classes, was but little below two hundred. Of these there were over fifty geldings and mares in the harness; twelve pairs of matched horses; thirty brood mares, with foals at side; about thirty colts, three years old and under; and about fifty stallions. Among these was a large number of trotting and running horses; but none
entered as pure bloods. The Morgans were the most numerous of any breed, and next to them, the Black Hawks.

In the department of neat stock, there was a large entry; though, taken as a whole, it was not regarded as a good representation of the various sections of the State. The Devons predominate; being considered by our farmers, generally, not only the most beautiful, but the best adapted to the climate and the soil of the State. There were some Durhams, a few Ayrshires, and a great number of natives and mixed breeds.

The number of Bulls, of all ages and breeds, on the ground, was about thirty; embracing many large and elegant animals. But few cows were found on the field; — the whole number of entries being but twelve — a great deficiency in so good a grazing State, as New Hampshire. There was a small, but very satisfactory entry of working oxen. The counties of Cheshire, Merrimack and Hillsborough, were fairly represented; while the equally important ones of Rockingham, Sullivan and Grafton, (to say nothing of Carroll and Belknap, or Strafford and Coos,) presented but few. There were but two or three entries of fat cattle. The young stock was unusually good.

Our farmers have seldom shown their best sheep, at our Fairs. Now and then, a successful wool-grower selects specimens from his flocks, and bears off the awards; but generally, as was the case the present year, only a few have been presented; thus giving the impression that we have no superior sheep in the State. The number entered was sixty-two, and these were owned by three or four individuals.

There were about thirty entries of Swine, embracing fifty-one animals, and constituting one of the noblest exhibitions in this department, the Society has ever had.

The Exhibition of farm productions, and the fabrics of manufacturing establishments, with implements, machinery, and the works of art, and all that difficult-to-be-named variety, which so much contributes to a successful and pleasing Fair, occupied a large space, and exceeded all former exhibitions at our shows. They were arranged in a long hall, constructed for the purpose, extending over an area of more than 12,000 square feet.

The Address was delivered by B. P. JOHNSON, of Albany,
Secretary of the New York Agricultural Society, and was received with unmingled satisfaction. He was followed by Hon. Edward Everett, in an eloquent and beautiful speech.

During the three days of the Fair, several meetings of the Society were held; at which interesting addresses were made by Messrs. J. S. Wells, and H. F. French, of Exeter, Mr. W. S. King, of Boston, (Editor of the Journal of Agriculture,) J. P. French, of Biddeford, Me., and by many others, who were present as the guests of the Society.

The Receipts, including a subscription of the citizens of Manchester, were over $5,000; which, after meeting every expenditure, will leave the Society in a prosperous pecuniary condition.

The officers elected for the year are:—

PRESIDENT.

P. P. Woodbury, of Bedford.

EXECUTIVE COMMITTEE.

Henry F. French, of Exeter, E. J. Glidden, of Unity,
Wm. Tenney, of Hanover, Brooks Shattuck, of Bedford
Joseph Robinson, of Concord.

SECRETARY.

James O. Adams, of Manchester.

TREASURER.

Frederick Smyth, of Manchester.

Manchester, N. H., Dec. 20, 1853.

J. O. A.

LIST OF AGRICULTURAL BOOKS.

We are confident that a list of the best agricultural books, with their prices, and notices of their merits will be acceptable to American Farmers; and have, therefore, prepared such statement and notices of some of the American publications, that we find on our own shelves. In the next number of this Journal, (by whomsoever edited,) we will endeavor to make the list more complete and useful, by the addition of such valuable works, both English and American, as have been herein omitted.

In noticing American agricultural publications, we may, with
out prejudice to other publishers, well place Charles M. Saxton, of New York, at the head of the list: for he has generously and perseveringly devoted and confined himself to the publication of works strictly agricultural; and has issued, in acceptable style, more works on this subject than any and all other American publishers. To the other enterprising gentlemen, herein after mentioned, who have catered for the farmer, and who, by their enterprise have given generous encouragement to agricultural writers, our thanks are due; and the agricultural press has ever been prompt in their acknowledgment.

C. M. Saxton, Publisher, New York.

Lectures on Practical Agriculture.—By James F. W. Johnston.

Whatever may be our estimate of Professor Johnston’s fitness for the position of historian, which he has, it appears, of late assumed, there can be but one opinion of his ability as an Agricultural Chemist. He is known to us chiefly through his "Lectures on Agricultural Chemistry and Geology," (of which more than twenty editions have already been published and exhausted in the United States,) and by the echo of his home reputation.

The volume before us contains nine lectures delivered before the New York State Agricultural Society, illustrating the relations which several of the branches of natural science bear to the art of Agriculture. His lectures are not the mere speculations of a dreamer, or the accumulations of a busy book-worm. They are the results of active inquiry, as well as of profound research, and present a mass of useful information upon matters of every day interest to the farmer; and this in a style so plain, straightforward, and almost homely; that any one can grasp all that the lecturer wishes to convey. If our readers will but put into practice all they can learn by these lectures, we will leave the plump condition of their pockets to be the best eulogies upon the Professor’s performance.

American Poultry Yard By D. J. Browne, Price, In cloth, $1.00; paper, 75 cents.

In answer to a general call for information, consequent upon the fowl fever created by the New England Poultry Shows, various compilations have appeared; and, among them, the work
under notice; with an interesting and valuable appendix by Samuel Allen. It has had a wide circulation; and is recommended as a very useful book to poultry breeders and fanciers.

The Progressive Farmer—A Scientific Treatise on Agricultural Chemistry. By J. A. Nash, Principal of Mt. Pleasant Institute, Instructor in Agriculture in Amherst College, and Member of the Massachusetts State Board of Agriculture. Price 50 cts.

Mr. Nash is a scholar, who is well acquainted with farm labor; and a farmer familiar with science as applied to agriculture; and so being, he could not produce other than an excellent work for the man who aspires to be a progressive farmer. The book should be in the hands of all young farmers, and of ninety-nine and nine-tenths out of every hundred of the old ones.


This is the third edition of a work well known in New England, where it will require no recommendation. The large and wide circulation of other editions, has induced the author to prepare this (third) edition, and to enlarge it by notes and copious extracts from other works of authority; adapting it at the same time, to all parts of the country.

Sheep Husbandry. With an account of the different breeds, and general directions in regard to Summer and Winter management, breeding, and the treatment of disease, with portraits and other engravings. By Henry S Randall. Price, $1.25.

This is a standard work, and is universally acknowledged to be one of the best treatises on the subject extant.

The Field Book of Manures, or American Muck Book.—By D. Jay Brown. $1.25.

A very useful and valuable work for the intelligent and enquiring farmer, who desires to make everything tell in the manure-heap, and would keep his soil in good heart.


This is an excellent work for old and young; it explains the science of Agriculture, so plainly and so well, that while a child can understand, a man may learn. It will be a good day for the interests of agriculture, and of the country as dependent on it; when this little book is found and studied in every district and private school in the land.
The American Cattle Doctor; containing the necessary information for preserving the health, and curing the diseases of Oxen, Cows, Sheep and Swine, &c. &c. By G. H. Dadd, M. D. Veterinary Practitioner, &c. Price, $1.

By far the easiest and best mode of curing the diseases of animals, is to keep the diseases and the cattle separate. With cattle, as with ourselves, disease is caused in most instances, by an excess of carefulness or of carelessness. Too much and too rich food is as injurious as too little and too poor. Perhaps fewer diseases, in proportion to the numbers tested in each way, spring from privation, than from surfeit. Too little, as well as too great, exposure to heat and cold, has a tendency to create disease; in one case it causes disease, in the other it renders man or animal more liable to it. In our experience, care is more needed among cattle than cures; and all the diseases, which came under our treatment, sprang from the want of judicious care. Has a cow a cough, has she the hoven, has she the red-water, or the puerperal fever? it is often from over care;—too much warmth, or too much feed. Is she mangy, lousy, hide-bound, or affected with hornail? the chances are, that she has been neglected. Of course there are very many exceptions to this and to every other general rule. But this is our experience.

But animals, as men also, will, with the best care we can bestow on them, become sick at times; and recourse must be had to medical remedies.

Reasoning from analogy, the prescription of vegetable medicines would appear to be the most natural treatment of animals. The Cat and the Dog will search for miles to find a self-prescribed remedy for their internal ailments; and, left to themselves,—guns and traps and fights excepted,—the only disease to which they succumb is old age. Even man, in a state of nature, gathers his medicines from the woods and fields. Among our farmers, there is a very general, and a very strong, predilection in favor of the herbal practice. Garget-root and bark teas and washes are ancient and respected remedies. In matters of medicine, where life is at stake, as in the more solemn subject of religion, where the soul is in jeopardy, men must not stand upon a point of pride, or of consistency,—which is a mere synonyme of obstinacy; the great question in either case is, has the remedy been proved to be adequate? Will it save?
Dr. Dadd, the author of this Treatise, is a man of science and of observation: and we know enough of him to be aware, that he would not risk his high reputation upon recommendations which experience would show to be valueless. He has adopted the herbal, or botanical practice, and undoubtedly with good reason. The sole question, as we said before is, *will it answer the purpose?* and thousands of farmers thunder back, *Aye.*

There can be but one opinion, as to the ability with which the work is written. The statements are clear, and the comments are ingenious and valuable. The advice, too, as to the selection, the management and breeding of all kinds of farm stock, is well-considered and excellent. The publishers have done their duty faithfully, and have presented a valuable book in a becoming dress.

**Mysteries of Bee-Keeping Explained.**—By M. Quimby. *Price $1.00.*

We have read this work with considerable care, and commend it to Apriars. The work contains much information not afforded by any other treatise on the subject, that has come under our notice; and for every *assertion* of the author he has "endeavored to give a *test*, that the reader may apply it, and satisfy himself, and trust to no one." In these days of general speculation, we have so many speculative theories, that this is no vain precaution.

**The Shepherd's Own Book;** With an account of the different Breeds, the Management, and Diseases of Sheep; and General Directions in regard to Summer and Winter Management, Breeding, and the Treatment of Diseases; with Illustrative Engravings, by Youatt & Randall, embracing Skinner's Notes on the Breed and Management of Sheep in the United States, and on the culture of Fine Wool. *Price $2.*

This is the same work commended above, with the important addition of Mr. Youatt's valuable treatise on the Breeds, Management and Diseases of Sheep; which last, Mr. Saxton has also published, in a separate volume.

**Landscape Gardening, or Parks and Pleasure Grounds.** *Price 1.25.*

An excellent reprint of an English work, by Charles H. J. Smith, Landscape Gardener, and Garden Architect, &c.; edited and adapted to the wants of American gentlemen, by Lewis F. Allen. *The author, Mr. Smith, appears to be a practical and a*
sensible man, who thoroughly understands his subject, and loves it. Mr. Allen is well known throughout America, as one of the same class. The result of their joint efforts is a work that we heartily commend to country gentlemen.


Mr. Thomas is widely known as one, not only of our most intelligent, but also most cautious and exact horticultural writers. One may not always give assent to his opinions; but his statements of facts are always unprejudiced and reliable. This is an admirable trait in a writer; but, even among horticultural authors and editors, it is one not universally possessed.

This work is carefully written, and profusely illustrated; and is adapted to the wants of the tyro in horticulture, as well as of more experienced devotees of Pomona.

**Youatt and Martin on Cattle.** Being a Treatise on their Breeds, Management and Diseases, comprising a full History of the Various Races; their Origin, Breeding and Merits; their capacity for Beef and Milk. By W. Youatt and W. C. L. Martin. The whole forming a complete Guide for the Farmer, the Amateur, and the Veterinary Surgeon, with 100 illustrations. Edited by Ambrose Stevens. Price $1,25.


**Youatt on the Pig.**—A Treatise on the Breeds, Management and Medical Treatment of Swine, with directions for Salting Pork and Curing Bacon and Hams.—By Wm. Youatt, V. S. Illustrated with engravings drawn from life. 60 cts.

**Youatt on the Sheep.**—Their Breeds, Management and Diseases, with illustrative engravings; to which are added Remarks on the Breeds and Management of Sheep in the United States, and on the Culture of Fine Wool in Silesia. By William Youatt. 75 cts.

To praise Youatt’s Treatises on the breeds, management and diseases of Animals is unnecessary labor; they have become authority.

The first work in the Series above has been adapted to the wants of the American Farmer, by Ambrose Stevens, of New York,—a distinguished writer and a prominent and successful breeder of Cattle. Mr. Stevens has stripped the work of much that was not demanded here,—as a history of local and inferior
breeds of Cattle in England, &c; — and has added to the medical prescriptions of the author, the course of treatment prescribed by homœopaths.

The very titles of these volumes convey sufficient recommendation.

**The American Architect.** Price—

We have ourselves, received considerable assistance from these volumes; others, about to build or to alter buildings, by consulting them, will find valuable information.

**Family Kitchen Gardener** By Robert Buist, author of the American Flower Garden Directory, &c.—Cloth, 75 cts; paper, 50 cts.

The author is one of our best known florists and gardeners: and his work contains much practical information,—the result of his long experience.


A republication of an excellent work, which contains, in small compass, much useful knowledge.

**Stevens' Book of the Farm.**—A Complete Guide to the Farmer, Plowman, Cattleman, Shepherd, Field Worker and Dairy Maid. By Henry Stevens. With Four Hundred and Fifty Illustrations; to which are added Explanatory Notes, Remarks, &c., by J. S. Skinner. Cloth, $4, leather, $4.50.

This is an excellent work,—one of the best that agricultural literature can boast; but a later edition, edited by Prof. J. P. Norton, with notes by the American Editor, and considerable corrections and additions by the Author, is, for these reasons, preferable.

**The Diseases of Domestic Animals;** by R. L. Allen. Cloth, 75 cts; paper, 50 cents.

A very convenient and useful book, prepared for the use of the farmer, by one of the former editors of the American Agriculturist.


Mr. Miner is a close observer, and a vigorous writer; and he has here presented us with a most interesting and excellent work
on Bee-Culture. He is, himself, an enthusiast; and, thereby, soon infects his readers with his earnestness. The work is not only interesting, but reliable.

_The American Farm Book._—By R. L. Allen.

The title gives a good idea of the contents of this work; and the name of the author is a good guarantee that his subject is well treated.

_Southern Agriculture._—Comprising Essays on the Cultivation of Corn, Hemp, Tobacco, Wheat. Price $1,00.

This work was written by Adam Beatty, of Kentucky, and though it has been several years in print, the advice given by this practical and successful old farmer is still of great value to the Southern and Western cultivator.

_Allen's Rural Architecture._ Comprising Farm Houses, Cottages, Carriage Houses, Sheep and Dove Cotes, Piggeries, Barns, &c. &c. By Lewis F. Allen. $1,25.

As an architect, Mr. Allen makes no claims. Nevertheless we have here, from his hand, as excellent a guide book and adviser, as we have ever seen. Indeed, it is not too much to say, that taken all in all, it is one of the best books for a farmer about to build, or to re-arrange his buildings, that has come under our notice. And for this evident reason, that it is the written and graven experience of one, "who has been through the mill," and knows what is wanted.

The work is beautifully illustrated with drawings of farm-houses, and farm-cottages, barns, bee-houses, poultry houses, piggeries, dove-cotes, dairy buildings, rabbit hutch, &c., &c., and as well of animals and fowls.

_The Complete Farmer and Gardener._ By Thomas G. Fessenden. 2 vols. in one. $1,25.

Mr. Fessenden is gratefully remembered in New England, where he labored long and earnestly to enlighten the farmer, and to advance the science of agriculture. The work before us contains the experience of his life time. The improvements in agriculture have rendered some portions of the work useless; but there is much in it, that cannot go out of date.
SAXTON'S RURAL HAND BOOKS—PRICE 25 CENTS EACH.

HOGS; Their Origin and Varieties; Management, with a View to Profit, and Treatment under Disease; also Plain Directions relative to the most approved modes of preserving their flesh. By H. D. Richardson, author of "The Hive and the Honey Bee," &c. &c. With Illustrations—12mo.

THE HIVE AND HONEY BEE; With plain directions for obtaining a considera-ble Annual Income from this branch of Rural Economy; also an Account of the Diseases of Bees, &c. By H. D. Richardson. With Illustrations.


THE HORSE; Their Origin and Varieties; with Plain Directions as to the Breeding, Rearing and General Management, with Instructions as to the Treatment of Disease. Handsomely Illustrated—12mo. By H. D. Richardson.

THE ROSE; The American Rose Culturist; being a Practical Treatise on the Propagation, Cultivation and Management in all Seasons, &c. With full directions for the Treatment of the Dahlia.

THE PESTS OF THE FARM; With Instructions for their Extermination; being a Manual of Plain Directions for the certain Destruction of every description of Vermin. With numerous Illustrations on Wood.

AN ESSAY ON MANURES; Submitted to the Trustees of the Massachusetts Society for Promoting Agriculture, for their Premium. By Samuel H. Dana.


CHEMISTRY MADE EASY; For the Use of Farmers. By J. Topham.

THE AMERICAN KITCHEN GARDENER; Containing directions for the Cultiva-tion of Vegetables and Garden Fruits. By T. G. Fessenden.

THE BEE-KEEPER'S CHART; Being a brief practical Treatise on the Instinct Habits and Management of the Honey Bee. By E. W. Phelps.

EVERY LADY HER OWN FLOWER GARDENER; Containing Simple and Prac-tical, Directions for Cultivating Plants and Flowers; also Hints for the Management of Flowers in Rooms, with brief Botanical descriptions of Plants and Flowers. By Louisa Johnson.

THE COW; DAIRY HUSBANDRY AND CATTLE BREEDING. By M. M. Mil-burn, and revised by H. D. Richards, and Ambrose Stevenson. With Illustrations.

These books contain the condensed matter of many large volumes; and are worth ten times the price charged for them.

FLAX; ITS TREATMENT, AGRICULTURAL AND TECHNICAL Price 25 ets. This is the Lecture delivered before the New York Agricultural Society, at their last Annual Fair, by John Wilson, late President of the Royal Agricultural College at Cirencester, &c., &c. The discovery of the Chevalier Claussen, by which the
fibre of flax is so prepared as to be spun either alone, or in combination with cotton or silk, upon the machinery now employed in the manufacture of cotton and woolen goods, has given an impetus to the culture and consumption of flax, that increases as the new fabrics come into more extensive use. Whoever proposes to embark in the flax culture, as well as the multitudes now engaged in it, will do well to purchase forthwith this pamphlet.

BLANCHARD & LEA, PUBLISHERS, PHILADELPHIA.

YOUATT ON THE HORSE; Together with a General History of the Horse; a dissertation on the American Trotting Horse,—how Trained and Jockeyed, with an account of his remarkable performances; and an Essay on the Ass and Mule. By J. S. Skinner. Price $1.50.

This work has already taken rank among standard publications, and requires no commendation. Mr. Youatt is well known to have been a man of great natural intelligence, a scholar, and a surgeon of distinction: and his treatises on the breeding, management and diseases of the various domestic animals are unsurpassed, if at all equalled, by any others. This particular work, we commend most fully and unreservedly to all who are interested, (and who is not?) in horse-flesh.


This is an exceedingly convenient and useful work for reference. It is, as its name indicates, a dictionary; and by turning to any desired word, one may, at once, find such information as to its meaning, if it be a botanical term;—or its nature, mode of planting, &c., &c., if it be a plant,—as will answer the purposes of ordinary inquiry.

THE BOOK OF NATURE. By F. Schoedler, Professor of Natural Sciences at Worms; and formerly Assistant in the Chemical Laboratory of Geissen. Translated by Henry Medlock, F. C. S. Illustrated by six hundred and seventy-nine engravings. Price—

This is one of those works, that because of its great value, we fear will never have the circulation it merits. It is intended, and admirably adapted to be an elementary introduction to the Sciences of Physics, Astronomy, Chemistry, Mineralogy, Geology, Botany, Zoology and Physiology;—Sciences that the accomplished practical farmer should have mastered, before he has claim to the
title. It will argue well for the intelligence and the inquiring spirit of our agriculturists, if there shall come from them a great demand for this sterling publication.

**Carpenter on Alcoholic Liquors.**

Our friends, the Publishers, have sent us the above Essay; and a very excellent one it is;—a prize Essay on the effect of Alcoholic Liquors on the Human System. Farmers as a class, less than men of other professions, require Maine Laws and Alcoholic Lectures; but no man,—be he temperate or intemperate, can rise unbefitted from a perusal of this little treatise.

**CHARLES SCRIBNER, PUBLISHER, NEW YORK.**

**The Fruit Garden.**—By P. Barry. Price $1.25

Mr. Barry is the present editor of the *Horticulturist,—*the successor to the post of Downing. As a horticultural writer, he ranks second to none in the country; and his Fruit Garden is a valuable contribution to horticultural literature. Its arrangement is new and original; and his subject is handled in a masterly manner. No work on Fruit in the country is preferable to this.

**Rural Homes.** By Gervase Wheeler. Price —

A most excellent* work, one calculated to command a wide circulation, and to do a great deal of good in adorning the country with tasteful edifices, fitted to the means and to the wants and position of the occupants. Common sense seems to have governed the pen of the author; and convenience and appropriateness characterises his plans.

**MOORE, ANDERSON & CO, PUBLISHERS, CINCINNATI, O.**


Neither the author of the treatise on the Grape nor the writer of the Appendix, that treats of the strawberry culture, needs an introduction to the American public. They have produced a work that is a valuable addition to our means of information; and creditable alike, from the matter of its contents and its typographical execution and appearance, to publishers and writers. The making of wine has become a matter of national import-
ance, even when viewed through Maine Law spectacles for its influence on general temperance; and the Strawberry is a delicious fruit, that may be cultivated with success the country over, were growers conversant with its proper management.


We can give to this work no better wish, than that it may have as wide a circulation as its merits deserve. It is an important and in every respect a most excellent work, and, wthal, absorbingly interesting. The American Editor, Alphonso Wood, M. A., of Cincinnati, has faithfully and acceptably performed his arduous and delicate duty;—doing justice to author and reader.

The Course of Creation.—By John Anderson, D. D.

We point with pride to such a publication as this, and others of a like high character mentioned in the list. That there is a demand for such works is a significant fact. Time was, and that not long ago, when the Student, alone, would call for them;—when to publish them for the agriculturist, for the masses; or to commend them to their reading, would have been rightly considered a waste of time and ink. But a brighter day has dawned upon us. Science is no longer confined to academical halls and college lecture rooms; the farm house is now illuminated by its light, and the practical agriculturist is not ashamed or afraid to learn from the lips of the wise and the learned, of matters above the mere Art of his calling. We heartily thank author and publisher, for this volume. To have issued it is honorable to them; to demand it, is honor to us.

Miscellaneous.


Our readers will remember the interesting extracts from the proof-sheets of this (then forthcoming), volume in the last number of this Journal. It is, in every respect, a most reliable work on an exceedingly interesting subject; and its perusal will convey, not only instruction, but great gratification to all readers. Its style is fascinating, and the treatment of its subject shows much
experience, and evidences ability and enthusiasm. A work of this kind will create and instruct a taste for Bee-Culture, which is now too much neglected; and will do good.


Here is another excellent work on the Grape, by another practical man. Mr. Chorlton is well known to us by his excellent communications for many years to the Horticulturist, and this book is the record of his own experience, and the work of his "evenings at home." It is a most valuable manual, and we recommend it to all cultivators of exotic grapes.

Insects Injurious to Vegetation. Published by John Bartlett, Cambridge, Mass.

This noble work, by Dr. T. W. Harris, of Cambridge, ranks by common consent, above all rivals in the department of Entomology, of which it treats. We are glad to know that a few copies of the last edition are on sale, and may be procured of John Bartlett, Cambridge, Price, $2.00, bound in cloth.


This is unquestionably one of the most complete and reliable works on Agriculture, that has been given to the world. The author, Henry Stephens, Editor of The (British) Journal of Agriculture, is a practical farmer of the highest class, thoroughly versed in the minutest details of his profession,—a man of scientific eminence, and an easy, elegant writer. From a man possessing these trifold qualifications for his task, we would expect precisely what we have received,—a complete, instructive, and most absorbingly-interesting manual of Husbandry.

The work is Americanized, or adapted to the wants of American farmers, by the late Prof. John P. Norton.

Price. Muslin, ............................................. $6.00
Sheep, .................................................. 6.50
Roane or Imitation Morocco, .................................. 6.50
Paper covers, (in four parts,) .................................. 5.00
Miner's Poultry Book.—By T. B. Miner, Editor of Northern Farmer.

We have not been able to give this book the requisite examination; but from a cursory glance at its contents, it appears to be an improvement on preceding publications of the kind. The illustrations are, many of them, superior; and the subject is handled with a freedom that betokens knowledge.

A Home for All.—By O. S. Fowler. Published by Fowlers & Wells, New York and Boston.

The novel points insisted on in this book are gravel walls for houses, and an octagon shape. Mr. Fowler does not claim to have been the originator of this mode of building outer walls, or of this form of dwelling house, but having observed and appreciated its excellencies, he here sets them forth in the strongest light. The book is well worth consideration. The writer knows what he is about, and is earnest in his advocacy of the new system. Not a few good hints may be gathered from this work; whether one assents to Mr. Fowler's idea or not. Ed.
**LIST OF AGRICULTURAL PAPERS IN THE UNITED STATES.**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Editor</th>
<th>Location</th>
<th>Terms</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer and Artizan</td>
<td>Dr. E. Holmes</td>
<td>Portland</td>
<td>$2.00</td>
<td>weekly</td>
</tr>
<tr>
<td>Maine Farmer</td>
<td></td>
<td>Augusta</td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>

**NEW HAMPSHIRE.**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Editor</th>
<th>Location</th>
<th>Terms</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granite Farmer</td>
<td>C. E. Potter</td>
<td>Manchester</td>
<td>$1.50,</td>
<td>weekly</td>
</tr>
</tbody>
</table>

**MASSACHUSETTS.**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Editor</th>
<th>Location</th>
<th>Terms</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston Cultivator</td>
<td>{ James Pedder, }</td>
<td>Boston</td>
<td>$2.00</td>
<td>weekly</td>
</tr>
<tr>
<td>Conn. Valley Farmer and Mechanic</td>
<td>{ Sanford Howard, }</td>
<td>Springfield</td>
<td>50 cents</td>
<td>monthly</td>
</tr>
<tr>
<td>Journal of Agriculture</td>
<td>{ William S. King, }</td>
<td>Boston</td>
<td>50 cents</td>
<td></td>
</tr>
<tr>
<td>Massachusetts Ploughman</td>
<td>{ J. J. Mapes, }</td>
<td>Boston</td>
<td>$2.00</td>
<td>weekly</td>
</tr>
<tr>
<td>New England Cultivator</td>
<td>{ Levi Bartlett, }</td>
<td>Boston</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>New England Farmer</td>
<td>{ Simon Brown, }</td>
<td>Boston</td>
<td>$2.00</td>
<td>weekly</td>
</tr>
<tr>
<td></td>
<td>{ F. Holbrook, }</td>
<td></td>
<td>1.05,</td>
<td></td>
</tr>
</tbody>
</table>

**NEW YORK.**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Editor</th>
<th>Location</th>
<th>Terms</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Agriculturist</td>
<td>{ A. B. Allen, }</td>
<td>New York</td>
<td>$2.00</td>
<td>weekly</td>
</tr>
<tr>
<td></td>
<td>{ O. Judd, }</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Artisan</td>
<td>John Bullock</td>
<td>New York</td>
<td>2.00,</td>
<td>weekly</td>
</tr>
<tr>
<td>Albany Cultivator</td>
<td>{ Luther Tucker, }</td>
<td>Albany</td>
<td>$2.00</td>
<td>weekly</td>
</tr>
<tr>
<td>Country Gentleman</td>
<td>{ J. Warren, }</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genesee Farmer</td>
<td>Daniel Lee</td>
<td>Rochester</td>
<td>50 cents</td>
<td>monthly</td>
</tr>
<tr>
<td>New York Farmer</td>
<td>Eleno Comstock</td>
<td>Albany</td>
<td>$2.00</td>
<td>weekly</td>
</tr>
<tr>
<td>Northern Farmer</td>
<td>T. B. Miser</td>
<td>Utica</td>
<td>1.00</td>
<td>monthly</td>
</tr>
<tr>
<td>Peoples' Journal</td>
<td>A. E. Beach</td>
<td>New York</td>
<td>1.00</td>
<td>monthly</td>
</tr>
<tr>
<td>Plow, Loom, and Anvil</td>
<td>M. Finch</td>
<td></td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Rural New Yorker</td>
<td>{ D. D. T. Moore, }</td>
<td>Rochester</td>
<td>2.00</td>
<td>weekly</td>
</tr>
<tr>
<td></td>
<td>{ J. Harris, }</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wool Grower</td>
<td>{ T. C. Peters, }</td>
<td>Rochester</td>
<td>50 cents</td>
<td>monthly</td>
</tr>
<tr>
<td>Working Farmer</td>
<td>{ D. D. T. Moore, }</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>{ J. J. Mapes, }</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PENNSYLVANIA.**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Editor</th>
<th>Location</th>
<th>Terms</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Journal</td>
<td>{ J. L. Darlington, }</td>
<td>Westchest'r</td>
<td>$1.00,</td>
<td>monthly</td>
</tr>
<tr>
<td></td>
<td>{ A. M. Spangler, }</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MARYLAND.**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Editor</th>
<th>Location</th>
<th>Terms</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Farmer</td>
<td>S. Sands</td>
<td>Baltimore</td>
<td>1.00,</td>
<td>monthly</td>
</tr>
</tbody>
</table>

**VIRGINIA.**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Editor</th>
<th>Location</th>
<th>Terms</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Planter</td>
<td>F. G. Ruffin</td>
<td>Richmond</td>
<td>1.03,</td>
<td>monthly</td>
</tr>
</tbody>
</table>

*The list is taken from the Exchange list of the Journal of Agriculture, and may be incomplete.—Ed.
NORTH CAROLINA.

Farmer's Journal, J. F. Tompkins, Raleigh, $1.00, monthly

SOUTH CAROLINA.

Farmer and Planter, { Seaborn, Gilman, } Pendleton, 1.00, monthly
{ Simpson & Burt, }
Southern Agriculturist, { A. G. Sumner, } Laurensville, 1.00, monthly
{ Wm. Sumner, }

GEORGIA.

Soil of the South, { Jas. M. Chambers, } Columbus, 1.00, monthly
{ Chas. A. Peabody, }
Southern Cultivator, { D. Lee, } Augusta, 1.00, monthly
{ D. Redmond, }

ALABAMA.

American Cotton Planter, N. B. Cloud, Montgomery, 1.00, monthly

OHIO.

Ohio Cultivator, { M. B. Bateman, } Columbus, 1.00, semi m.
{ S. D. Harris, }
Ohio Farmer, Thomas Brown, Cleveland, 2.00, weekly

INDIANA.

Farm and Shop, { O. P. Mayhew, } Indianapolis 1.00, semi m.
{ J. B. Dillen, }
Indiana Farmer, { D. P. Holloway, } Richmond, 1.00, monthly
{ W. T. Jenks, }
Western Plow-Boy, J. P. Jenks, Fort Wayne, 1.00, semi m

ILLINOIS.

Prairie Farmer, { J. A. Wight, } Chicago, 1.00, monthly
{ J. A. Kennicott, }
Valley Farmer, Ephraim Abbott, St. Louis, 1.00, monthly

MISSOURI.

MICHIGAN.

Farmer's Companion, and Horticultural Gazette, { Charles Fox, } Detroit 50 cents, monthly
{ Charles Betts }
{ J. C. Holmes, }
{ Lewis Cone, }
Michigan Farmer, { R. F. Johnston, } Detroit, 1.00, monthly
{ Warren Isham }
{ S. B. Noble, }

FLORIDA.

Tropical Farmer, L. C. Gaines, Ocala, 1.00, monthly

IOWA.

Iowa Farmer, { James W. Grimes } Burlington, 1.00, monthly
{ J. F. Tallant, }
Wisconsin Farmer, Mark Miller, Janesville, 1.00, monthly

WISCONSIN.

HORTICULTURAL PAPERS.

Florist and Horticultural Journal, H. C. Hanson, Philadelphia, 2.00, monthly
Horticultural Review and Botanical { Dr. J. A. Warder, } Cincinnati, 2.00, monthly
Magazine, { J. W. Ward, }
Horticulturist, P. Barry, Rochester, 2.00, monthly

*These papers are discontinued, we believe: as we have not seen them for a long time.*
CONSTITUTION

OF THE

UNITED STATES AGRICULTURAL SOCIETY.

[AS AMENDED.]

PREAMBLE.

The undersigned, in order to improve the Agriculture of the country, by attracting the attention, eliciting the views, and combining the efforts of that great class composing the Agricultural community, and to secure the advantages of a better organization, and more extended usefulness among all State, County, and other Agricultural Societies, do hereby form ourselves into a Society, and for its government adopt the following Constitution:

NAME OF THE SOCIETY.

SECT. I. The name of this Society shall be the United States Agricultural Society.

MEMBERS' DUES.

SECT. II. The Society shall consist of all such persons as shall signify to any officer of the Society a wish to become a member, and who shall pay two dollars to the Treasurer of the Society, and a like sum annually thereafter; and of delegates from the State Agricultural Societies, in the States and Territories, and District of Columbia, who may be appointed to attend the annual and other meetings of the Society, and who shall pay the like sum, and also of such honorary members as the Execu-
tive Committee may see fit to elect. Each member shall be entitled to receive a journal, or publication of this Society, containing an account of its proceedings, and such additional matter as shall be deemed worthy of publication, free from any expense except postage. Twenty-five dollars shall entitle one to the privilege of Life-membership, and exempt him from any annual taxation.

OFFICERS.

SECT. III. The officers of this Society shall be a President, a Vice President from each State and Territory in the Union, and from the District of Columbia; a Treasurer, a Corresponding Secretary, a Recording Secretary, an Executive Committee, consisting of seven members; and a General Board of Agriculture, to consist of three members from each State, Territory, and District, to be appointed by the State Agricultural Societies where they exist; and where there are no such State Societies, by the Executive Committee of this Society. The President of the Society, the Corresponding and Recording Secretaries, shall be ex-officio members; and the President shall be Chairman of the Board of Agriculture, and of the Executive Committee.

DUTIES OF OFFICERS.

The President shall have a general superintendence of all the affairs of the Society. In case of his death or inability to discharge the functions of his office, the Board of Agriculture shall select a Vice President to act in his stead, and be clothed with the same powers; and he shall perform the same duties as the President until the next annual election.

VICE PRESIDENTS.

It shall be the duty of the Vice Presidents to advance all the objects of the Association in their several districts; to explain to Agriculturists the character and objects of this Society, and endeavor to obtain their co-operation and support; to watch the advance of practical Agriculture, and make known the results of the same, by reports or otherwise, from year to year.
BOARD OF AGRICULTURE.

It shall be the duty of this Board to watch the interest of Agriculture, as they are or may be affected by the legislation of the country; to make such reports, memorials, and recommendations, as may advance the cause of Agriculture, promote and diffuse Agricultural knowledge; to examine, and when necessary report upon, the practicability of establishing Agricultural schools, colleges, and model farms; to set forth the advantages of Agricultural and Geological surveys, and to show the importance of the application of science to Agriculture; to represent, through their reports, the relation of American Agriculture to that of foreign countries, and endeavor to obtain information from such countries; to point out the advantages of introducing any new staples, seeds, and plants, and obtain, as far as practicable, annual statistical returns of the condition of Agriculture throughout the different States; all which information shall be published by the Society, and form part of its Transactions.

EXECUTIVE COMMITTEE.

The Executive Committee shall transact the general business of the Society, and shall designate the time and place for exhibitions, regulate the expenditures, and take such supervisory charge of the business of the Society as may best promote its interest, and shall have the supervision of the publications of the Society. This body shall elect its own Chairman in the absence of the President; four members shall constitute a quorum.

TREASURER.

The Treasurer shall keep an account of all moneys, and shall pay bills only after they have been audited by the Corresponding or Recording Secretary, and another member of the Executive Committee, and countersigned by the President of the Society, or the Chairman of the Executive Committee.

CORRESPONDING SECRETARY.

The duty of the Corresponding Secretary shall be to correspond with persons interested in Agriculture. At each stated
meeting he shall read such portion of this correspondence as may be of general interest; and it shall be his duty to carry out and advocate the views of the Board of Agriculture, in obtaining, arranging and publishing any information they may desire to have laid before the Agricultural community.

**RECORDING SECRETARY.**

The Recording Secretary shall keep the record of the minutes of the Society, and of its Executive Committee.

**Sect. IV.** The annual meeting of the Society shall be held at the City of Washington, on the last Wednesday of February, in each year, when all the officers of the Society, not otherwise appointed, shall be elected by ballot, for the ensuing year; fifteen members shall constitute a quorum. The Executive Committee, however, shall be competent, with the approbation of the Society, to appoint occasional meetings, to be held at other places.

**Sect. V.** This Constitution may be altered at any annual meeting, by a vote of two-thirds of the members in attendance, provided not less than fifty members be present.
OFFICERS
OF THE
UNITED STATES AGRICULTURAL SOCIETY, 1854.

PRESIDENT.
MARSHALL P. WILDER, of Massachusetts.

VICE PRESIDENTS.
Ezekiel Holmes, of Maine,  Samuel Medary, Ohio,
G. W. Nesmith, N. Hampshire,  Robert Mallory, Kentucky,
Fred. Holbrook, Vermont,  M. P. Gentry, Tennessee,
B. V. French, Massachusetts,  Joseph A. Wright, Indiana,
Josiah Chapin, R. Island,  S. A. Douglass, Illinois,
S. D. Hubbard, Connecticut,  R. Atchison, Missouri,
Henry Wager, New York,  T. B. Flournoy, Arkansas,
James J. Mapes, New Jersey,  J. C. Holmes, Michigan,
Fred. Watts, Pennsylvania,  Simmons Baker, Florida,
C. P. Hobombe, Delaware,  T. J. Rusk, Texas,
W. D. Bowie, Maryland,  W. F. Coolbaugh, Iowa,
G. W. P. Custis, Virginia,  A. C. Ingham, Wisconsin,
Henry K. Burgwin, N. Carolina,  J. M. Horner, California,
John Witherspoon, S. Carolina,  J. H. Bradley, Dist. Col.,
P. M. Nightingale, Georgia,  S. M. Baird, New Mexico,
Richard Jones, Alabama,  H. H. Sibley, Minnesota,
Alex. H. Beques, Mississippi,  Joseph Lane, Oregon,
A. B. Roman, Louisiana,  Jos. L. Hayes, Utah.

EXECUTIVE COMMITTEE.
C. B. Calvert,  A. Watts,
John A. King,  Richard Peters,
A. L. Elwyn,  J. C. G. Kennedy,
J. D. Weston,  W. S. King,  } Ex-officio.
Moses Newell.

CORRESPONDING SECRETARY.
JOS. C. G. KENNEDY, Washington, D. C.

RECORDING SECRETARY.
WILLIAM S. KING, Boston, Mass.

TREASURER.
WILLIAM SELDEN, Washington, D. C.
HONORARY MEMBERS.

*Hon. Samuel Appleton, Boston, Mass.
Millard Fillmore, Ex-President U. S., Buffalo, N. Y.
Franklin Pierce, President U.S., Washington, D.C.
*Hon. Thomas H. Perkins, " "
Hon. Jonathan Phillips, " "
Hon. Josiah Quincy, Boston, Mass.
Edmund Ruffin, Esq., Marlbourne, Va.

LIFE MEMBERS.

Brooks, John
Burgess, Edward P.
Calvert, Chas. B.
Curtis, Thomas B.
Davis, Isaac
Davis, James
Dodge, Harvey
French, Benjamin V.
French, Jonathan
Haven, Franklin
Jay, John
King, John A.
Lawrence, Samuel
Lincoln, Levi
Manice, Deforrest
Mussey, Benjamin B.
Paige, J. W.
Proctor, Abel
Ruggles, Nourse & Mason, Princeton, "
Russell, George H.
Rusk, Thomas J.
Salisbury, Stephen
Tappan, John
Thayer, John E.
Walley, Samuel H.
Weld, Aaron D.
Wellington, Andrew
Whitmore, Charles O.
Williams, Aaron D.
Wilder, Marshall P.

Princeton, "
Dedham, "
Washington City,
Boston, Mass.
Worcester, "
Boston, "
Sutton, "
Brantree, "
Roxbury, "
Boston, "
New York City,
Jamaica, N. Y.
Boston, Mass.
Worcester, "
Brushville, N. Y.
Boston, Mass.
" "
Danvers, "
Worcester, "
West Roxbury, "
Nacogdoches, Texas,
Boston, "
Boston, "
Roxbury, "
Roxbury, "
E. Lexington, "
Boston, "
Roxbury, "
Boston, "

*Deceased.
ANNUAL MEMBERS.

Adams, Thomas Jenifer
Adams, Daniel
Adams, William T.
Adams, J. P.
Alger, Francis
Allen, Phillip
Allen, Crawford
Andrews, John P.
Anthony, D. C.
Annis, B. O.
Anthony, James G.
Andrews, Thomas
Arnold, Stephen C.
Arnold, Dutee
Athenæum, Providence
Ayer, Charles L.
Atkins, Isaiah
Babcock, Jacob D.
Banks, Gideon
Barber, Orson
Barber, Charles H.
Barker, J. A.
Bateman, William P.
Battell, Robbins
Bates, Thomas
Becar, Noel J.
Bell, John
Belcher, William
Beques, A. H.
Billings, Hartford B.
Bishop, E. H.
Black, Reading W.
Blagden, Thomas
Blodget, Lorin
Bond, George William
Bowie, Richard J.
Bowen, Samuel D.
Bowie, William D.
Bradley, G. C.
Breck, Charles
Brewer, Francis
Newcastle, Del.
Newbury, Mass.
Pawtucket, R. I.
Biddeford, Me.
Boston, Mass.
Providence, R. I.
Providence, R. I.
Salem, Mass.
Providence, R. I.
Providence, R. I.
Providence, R. I.
Slatersville, R. I.
Providence, R. I.
Providence, R. I.
Providence, R. I.
West Killingly, Conn.
Boston, Mass.
Hopkinton, R. I.
Frederick, Md.
Harrington, Conn.

Newport, R. I.
Norfolk, Conn.
Washington, D. C.
New York City.
Nashville, Tenn.
Providence, R. I.
Oxford, Miss.
Providence, R. I.
New Haven, Con.
Mount Holly, N. J.
Washington, D. C.
Washington, D. C.
Boston, Mass.
Rockville, Md.
Mt. Vernon, R. I.
Maryland.
Pamela, N. Y.
Milton, Mass.
Springfield, Mass.
Brown, Simon
Brown, James
Brownell, A. C.
Brumbaugh, David
Buffam, Thomas B.
Bucher, George H.
Burr, Devere
Burr, Horace
Burrington, H. H.
Burgwyn, Henry K.
Burrows, John H.
Butt, Richard
Brown, James
Cabot, Joseph S.
Calder, William
Calder, A. L.
Carpenter, Luther
Carey, Isaac H.
Carey, William F.
Carey, Otis
Carr, Vincent
Carter, D. K.
Causin, Nathaniel Pope
Cells, David B.
Chapin, Josiah
Chapman, J. G.
Chickering, Horatio
Claggett, D. C.
Clapp, Otis
Clapp, Edmund W.
Clark, Joseph W.
Coffin, Edmund
Conger, James L.
Congdon, Henry R.
Corbin, Francis P.
Cormott, Samuel
Cory, Christopher
Crary, Stephen
Cross, William J.
Culver, N.
Cunningham, B. Amos
Curry & Potter,
Curtis, C. P.
Custis, G. W. P.
Clark, Samuel
Clark, William Edward
Clark, James W.
Daniels, Adams
Davis, A. B.
Davis, A. B.

Concord, Mass.
New York City.
Providence, R. I.
Hagerstown, Md.
Newport, R. I.
Hagerston, Pa.
Washington, D. C.
Providence, R. I.

Jackson, N. C.
Providence, R. I.
Washington, D. C.
Boston, Mass.
Salem, Mass.
Providence, R. I.
Providence, R. I.
Centredale, R. I.
Boston, Mass.
Medway, Mass.
Foxboro', "
Providence, R. I.
Ohio.
Washington, D. C.
Burlington, N. J.
Providence, R. I.
Port Tobacco, Md.
Dedham, Mass.
Washington, D. C.
Boston, Mass.
Walpole, Mass.
Boston, Mass.
New York City.
Mt. Clemens, Mich.
Providence, R. I.
Paris, Georgia.
Susquehanna Co. Pa.
Lima, Ind.
Providence, R. I.

Newark, N. J.
Buckeystown, Md.
Providence, R. I.
Boston, Mass.
Alexandria, Vir.
Albion, R. I.
Providence, R. I.
Framingham, Mass.
Medway, Mass.
Brookville, Ind.
Tridelphia, Pa.
De Bow, J. D. B.
Degrand, P. P. F.
Demaree, C. L.
Devlin, Daniel
Dickerson, Edward N.
Dodge, Allen
Doty, James Duane
Douglass, Stephen A.
Duncan, James H.
Dunlevy, James H.
Driscoll, John F.
Dunnell, Jacob
Dyer, Elisha, Jun.
Dyer, Charles
Dyer, Cyrus
Dyer, Henry A.
Eames, Moses
Eames, James
Eastabrook, Joseph
Eddy, C. E.
Ellis, W. E.
Ellis Charles
Ellis, George
Elphinston, William H.
Elwyn, Alfred L.
Evans, Thomas
Everett, Edward
Farley, Joseph P.
Fearing, Albert
Fenn, Theophilus
Fenner, C. G.
Fisher, Freeman,
Fisher, Herman C.
Fleischman, C. L.
Fletcher & Brothers,
Fletcher, Gardiner
Fox, Rev. Charles
French, Benjamin B.
French, Henry F.
Fry, N. S.
Gates, Amos
Garwood, Samuel N.
Gentry, M. P.
Gardner, J. R.
George, Jesse
Gilman, Joseph T.
Gorham, John 2d.
Gould, James
Gowen, James

New Orleans, La.
Boston, Mass.
Quincy, Ill.
New York City.
New Jersey.
Alexandria, Va.
Menasha, Wis.
Chicago, Ill.
Haverhill, Mass.
Beatie's Bluff, Miss.
Providence, R. I.

Brooklyn, Conn.
Rutland, New York.
Providence, R. I.
Providence, R. I.

Roxbury, Mass.
Dedham, "
New York City.
New Brunswick, N. J.
Providence, R. I.
Chelsea, Mass.
Boston, Mass.
Harrisburgh, Pa.
Providence, R. I.
Dedham, Mass.
Franklin. "
Washington, D. C.
Providence, R. I.
Chelmsford.
Gross Isle, Mich.
Washington, D. C.
Exeter, N. H.
East Greenwich, R. I.
Clinton, Mich.
Accobinke, Va.
Richmond, Tenn.
Bristol, R. I.
Exeter, N. H.
Providence R. I.
Lexington, Mass.
Mount Airy, Pa.
Gray, John C.
Gray, Smith
Green, H.
Groom, Thomas
Grow, Galusha A.
Guild, Benjamin
Gwyn, W. M.
Hancock, Thos.
Harris, John M.
Hatch, Watson D.
Haven, Abner,
Hawes, A. C.
Hill, Clement
Hill, Clement D.
Hodges, Jas. R.
Holden, Zelotes W.
Holman, Ansel
Holcombe, C. P.
Hollyday, George S.
Hoppin, Wm. W.
Horsey, O.
Hooper, Robert
Horsford, Jedediah,
Horsford, E. N.
Howard, Flodoardo
Howard, Henry
Howe, John W.
Hotchkiss, Edw.
Hubbard, G. G.
Hubbard, Saml. B.
Hard, Julius C.
Hunter, W. F.
Hughes, W G.
Ives, Moses B.
Jessup, W.
Jemmison, William
Johnson, Oliver
Johnston, B. P.
Jones, N.
Jones, John P.
Jones, John D.
Jones & Lewis,
Jones, John
Kelley, Wm.
Kennedy, Jos. C. G.
Key, H. G. S.
Keyes, Edw. L.
Kilton, John J.
Kimball, Edmund
Kimball, Daniel
Boston, Mass.
Walpole, Mass.
Warrenville, Ill.
Boston, Mass.
Glenwood, Co. Pa.
Boston, Mass.
California.
Burlington, N. J.
Needham, Mass.
Providence, R. I.
Framingham, Mass.
Providence, R. I.
Upper Marlbro', Md.
Upper Marlbro', Md.
Providence, R. I.
Providence, R. I.
Slatersville, R. I.
Newcastle, Del.
Chestertown, Md.
Providence, R. I.
Weberton, Md.
Boston, Mass.
Moscow, N. Y.
Cambridge, Mass.
Washington, D. C.
Providence, R. I.
Smithfield, R. I.
West Needham, Mass.
Middletown, Con.
Medway Mass.
Woodville, Ohio.
Maryland.
Providence, R. I.
Montrose, Pa.
Boston, Mass.
Providence, R. I.
Albany, N. Y.
Watertown, N. Y.
Medway, Mass.
Providence, R. I.
Providence, R. I.
Middletown, Del.
Rhinebeck, N. Y.
Washington, D. C.
Leonardstown, Md.
Dedham, Mass.
Coventry, R. I.
Wenham, Mass.
Needham, Mass.
King, Wm. S.
King, John H.
King, James G.
Kinsley, Lyman
Kirby, J. B.
Knight, Geo. J.
Kuhn, Geo. H.
Lane, Joseph
Langley, Wm. B.
Landreth, David
Lathrop, F. J.
Lathrop, Paoli
Latham, R. W.
Lawton, B. H.
Lawrence, Abbot
Le Barron, James
Lee, Daniel
Lee, Charles
Lee, Artemas
Lee, John C.
Leland, A. M.
Lewis, Morgan
Lenox, Walter
Lockwood, Ralph
Long, B. B.
Lothrop, Henry W.
Luckett, J. H.
Lyman, H. B.
Lewis, J. C.
Mallory, Gibson
Manchester, Cyrus P.
Manchester, H. N.
Mapes, J. J.
Markoe, Francis
Martin, Stephen
Martin, F. S.
Mason, Earl P.
Mason, John H.
Mather, William W.
May, John J.
McHenry, Ramsey,
McAllister, H. N.
Mack, Elisha
Mercer, Richard S.
Merryfield, Wm. S.
Merryman, John Jr.
Metcalfe, Levi
Metcalfe, Joel
Miller, Frederick,

Boston, Mass.
Georgetown, D. C.
New York City.
Canton, Mass.
Brownsville, N. Y.

Boston, Mass.
Oregon.
New York City.
New York City.
Hadley Falls, Mass.
Washington, D. C.
Wickford, R. I.
Boston, Mass.
Bristol, R. I.
Rochester, N. Y.
Pen Yan, N. Y.
Templeton, Mass.
Salem, Mass.
Providence, R. I.
West Stockbridge, Mass.
Washington, D. C.

New York City.
Washington, D. C.
Providence, R. I.
Baltimore.
Providence, R. I.
Washington, D. C.
Kentucky.
Providence, R. I.
Providence, R. I.
Newark, N. J.
Washington, D. C.
Providence, R. I.
Olean's Co., N. Y.
Providence, R. I.

Columbus, Ohio.
Boston, Mass.
Maryland.
Bellefonte, Pa.
Salem, Mass.
Maryland.
Maryland.
Cockeysville, Md.
Providence, R. I.

*Deceased.
Miles, James
Moore, Jared L.
Moore, F.
Marston, W. S.
Morris, L. G.
Mowry, Nathaniel S.
Mullikin, Jas.
Munson & Johnson,
Nash, J. A.
Nesmith, Geo. W.
Northam, S. T.
Nevell, Moses
Newton, Eben
Newton, Isaac
Newbury, Edwin
Nightingale, P. M.
Northup, N. C.
Osborne, Sheldon
Page, J. H. W.
Patten, Wm. S.
Parker & White
Parmelee, Wm.
Pardee, S. D.
Payne, Abram
Peaslee, C. H.
Pell, Robert L.
Perry, James De W.
Perry, Elijah
Pickard, Amos
Pilott, A. P.
Pitcher, Lowell
Pierce, Joshua
Pook & Steere
Poore, B. Perley
Porter, Norman
Porthient, Wm.
Potter, Charles
Potter, Henry B.
Potter, N. F.
Putnam, Allen
Proctor, John W.
Pratt, Chester
Potter, Charles
Quincy, Edmund
Rand, Isaac P.
Randall, Nathan
Randall, Stephen
Raynolds, John
Read, Olney

Girard, Penn.
New York City.
Houston, Texas.
Quincy, Mass.
New York City.
Lime Rock, R. I.
Maryland.
New Haven, Conn.
Amherst, Mass.
Franklin, N. H.
Newport, R. I.
West Newbury, Mass.
Canfield, Ohio.
Springfield, Penn.
Brooklyn, Conn.
Albany, Geo.
Providence, R. I.
Cambridge, Conn.
New Bedford, Mass.
Providence, R. I.
Boston, Mass.
New Haven, Conn.
New Haven, Conn.
Providence, R. I.
Boston, Mass.
New York City.
Bristol, R. I.
Massachusetts.
West Hampden, Me.
New York City.
Davisville, R. I.
Washington, D. C.
Greenville, R. I.
West Newbury, Mass.
Berlin, Conn.

Bristol, R. I.
Providence, R. I.
Roxbury, Mass.
Danvers, Mass.
Providence, R. I.

Dedham, Mass.
Boston, Mass.
Tylerville, N. Y.
Providence, R. I.
Concord, Mass.
Providence, R. I.
Read, Elisha T.
Redmond, William
Reed, B. T.
Reed, Stephen
Reily, Luther
Reynolds, Daniel
Rhodes, C. S.
Rhodes, Robert
Rhodes, William H.
Richards, Edward M.
Robinson, John L.
Robinson, E. W.
Robinson, Charles
Roberts, Algeron S.
Robbins, James M.
Roberts, Jonathan
Rodman, Wm. M.
Ross, Wm.
Sands, Samuel
Salisbury, E. E.
Savage, A.
Savery, P. B.
Saunders, D.
Saxton, Charles M.
Seaver, Benjamin
Seaman, E. C.
Semms, B. J.
Sevier, Joel G.
Sewall, Charles C.
Sexton, Charles
Seymour, Epaphris
Seymour, Origen
Silliman, B.
Sheppard, George G.
Sherman, A.
Sherman, John A.
Slater, H. N.
Smith, A.
Smith, Joseph M.
Smith, Isaac H.
Smith, Stephen H.
Smith, George W.
Snow, W. W.
Tower, Justis
Spencer, John
Sprague, Seth
Sprague, Wm. 2d.
Stabler, Edward
Stavely, Wm.
Woonsocket, R. I.
New York City.
Boston, Mass.
Pittsfield, Mass.
Harrisburg, Pa.
Springfield, Mass.
Providence, R. I.

Pawtucket, R. I.
Dedham, Mass.
Rushville, Ind.
Dorchester, Mass.
New Haven.
Milton, Mass.
Accobink, Va.
Providence, R. I.
Providence, R. I.
Baltimore.
New Haven.
Hartford, Conn.
Washington, D. C.
New York.
Boston, Mass.
Michigan.
Piscataway, Md.
New Orleans, La.
Medfield, Mass.
Willow River, Wis.
Vermont.
Litchfield, Conn.
New Haven.
New York City.
Trumbull, Conn.
Rutland, N. Y.
Providence, R. I.
Newport, R. I.
Boston, Mass.
Fort Hill, Ill.
Providence, R. I.
Providence, R. I.
Oneonta, N. Y.
Lanesboro', Mass.
Indiana,
Duxbury, Mass.
Providence, R. I.
Sandy Springs, Md.
Lahaska, Pa.
Stedman, Josiah  
Steele, John H.  
Stiles, H. S.  
Stillman, O. M.  
Stokes, Martin C.  
Sutton, William  
Sweet, Joseph W.  
Stevens, Henry  
Taylor, Benjamin Ogle  
Taylor, John L.  
Taylor, T. A.  
Thomas, John  
Thompson, J.  
Thompson, Smith  
Thorburn, James M.  
Throckmorton, John H.  
Thurber, Dexter  
Thurber, Stanton T.  
Titman, Thomas  
Tobey, S. B.  
Trook, John N.  
Trowbridge, F.  
Tuck, Amos  
Tyler, Solomon  
Turner, F.  
Tyssonski, John  
Underhill, A.  
Wager, Henry  
Walker, Robert C.  
Walter, John J.  
Wanger, George  
Warder, John A.  
Watridge, H. S.  
Waters, Richard P.  
Watts, Frederick  
Wayland, F.  
Webster, Fletcher  
Weld, Aaron D. Jr.  
Wells, S. R.  
Wellington, Andrew  
Weston, J. D.  
Wheeler, Benjamin  
Whipple, Stephen  
Whitin, Paul  
Whiting, George W. C.  
Whittaker, Wm.  
Whitney, Charles  
Whitney, Henry  
Whitcomb, Joseph B. M. D.  

Boston, Mass.  
Peterborough, N. H.  
College Green, Md.  
Westerly, R. I.  
Providence, R. I.  
Massachusetts.  
Providence, R. I.  
Barnet, Vt.  
Washington, D. C.  
Chillicothe, Ohio.  
Slatersville, R. I.  
New York City.  
Oxford, Miss.  
Washington, D. C.  
New York City.  
Virginia.  
Providence, R. I.  
Providence, R. I.  
Washington, D. C.  
Providence, R. I.  
Washington, D. C.  
New Haven.  
Exeter, N. H.  
Providence, R. I.  
New Haven.  
Washington, D. C.  
Washington, D. C.  
Westernville, N. Y.  
Elizabeth, Pa.  
New Haven.  
Pottstown, Pa.  
Cincinnati, Ohio.  
Ithica, N. Y.  
Salem, Mass.  
Carlisle, Pa.  
Providence, R. I.  
Marshfield, Mass.  
Roxbury, Mass.  
New York City.  
E. Lexington, Mass.  
Washington, D. C.  
Framingham, Mass.  
Manton, R. I.  
Whitinsville.  
Washington, D. C.  
Providence, R. I.  
Roxbury, Mass.  
New Haven.  
Brooklyn, N. Y.
<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whittlesey, D.</td>
<td>Washington, D. C.</td>
</tr>
<tr>
<td>Williams, Eleazar</td>
<td>Richmond, Mass.</td>
</tr>
<tr>
<td>Williams, Erastus</td>
<td>Norwich, Conn.</td>
</tr>
<tr>
<td>Whitney, George H.</td>
<td>Providence, R. I.</td>
</tr>
<tr>
<td>Winch, Seth F.</td>
<td>Providence, R. I.</td>
</tr>
<tr>
<td>Wilbor, A. C.</td>
<td>Boston, Mass.</td>
</tr>
<tr>
<td>Wilson, David A.</td>
<td>Hawinton, Conn.</td>
</tr>
<tr>
<td>Winthrop, Robert C.</td>
<td>Boston, Mass.</td>
</tr>
<tr>
<td>Whittlock, W.</td>
<td>Baltimore.</td>
</tr>
<tr>
<td>Whittaker, Edgar R.</td>
<td>Boston, Mass.</td>
</tr>
<tr>
<td>Worthington, J. T.</td>
<td>Chillicothe, Ohio.</td>
</tr>
<tr>
<td>Young, G. W.</td>
<td>Washington, D. C.</td>
</tr>
</tbody>
</table>
INDEX TO VOL. I.

TABLE OF CONTENTS,—NO. I.

EDITED BY DANIEL LEE, ROCHESTER, N.Y.

(Editor of the Genesee Farmer.)

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction,</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>National Agricultural Convention,</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>United States Board of Agriculture,</td>
<td>24</td>
</tr>
<tr>
<td>4.</td>
<td>Notes and Observations on the Soils of the Scioto Valley,</td>
<td>30</td>
</tr>
<tr>
<td>5.</td>
<td>Experiments in Draining,</td>
<td>42</td>
</tr>
<tr>
<td>6.</td>
<td>On Mismanagement of Farm Horses,</td>
<td>50</td>
</tr>
<tr>
<td>7.</td>
<td>Progress of Agriculture in Massachusetts,</td>
<td>75</td>
</tr>
<tr>
<td>8.</td>
<td>Table of Analyses of the Ash of Grains,</td>
<td>91</td>
</tr>
<tr>
<td>9.</td>
<td>Food of Plants—its Sources and Assimilation,</td>
<td>92</td>
</tr>
<tr>
<td>10.</td>
<td>Draining a Georgia Swamp,</td>
<td>100</td>
</tr>
<tr>
<td>11.</td>
<td>Proceedings of Massachusetts Board of Agriculture,</td>
<td>103</td>
</tr>
<tr>
<td>12.</td>
<td>Address before Grand River (Michigan) Agricultural Society,</td>
<td>117</td>
</tr>
<tr>
<td>13.</td>
<td>Preparation of Wheat for Bolting in Russia,</td>
<td>126</td>
</tr>
<tr>
<td>14.</td>
<td>New Method of obtaining Early Fruits,</td>
<td>127</td>
</tr>
<tr>
<td>15.</td>
<td>Delignac's Process for the Conservation of Milk,</td>
<td>127</td>
</tr>
<tr>
<td>16.</td>
<td>Early Ripening of Corn</td>
<td>128</td>
</tr>
<tr>
<td>17.</td>
<td>Agricultural Statistics,</td>
<td>129</td>
</tr>
<tr>
<td>18.</td>
<td>Productions of Agriculture in the United States—Census of 1850,</td>
<td>137</td>
</tr>
<tr>
<td>19.</td>
<td>List of Members of United States Agricultural Society,</td>
<td>140</td>
</tr>
<tr>
<td>20.</td>
<td>Meeting of Executive Committee,</td>
<td>141</td>
</tr>
<tr>
<td>21.</td>
<td>Exhibitions of State Agricultural Societies in 1852,</td>
<td>142</td>
</tr>
<tr>
<td>22.</td>
<td>Editorial Acknowledgments,</td>
<td>143</td>
</tr>
<tr>
<td>23.</td>
<td>Agricultural Societies—their Names and Officers,</td>
<td>144</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS,—NO. II.

**EDITED BY J. C. G. KENNEDY, WASHINGTON, D. C.**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
</tr>
<tr>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
</tr>
<tr>
<td>10.</td>
</tr>
<tr>
<td>11.</td>
</tr>
<tr>
<td>12.</td>
</tr>
<tr>
<td>15.</td>
</tr>
<tr>
<td>16.</td>
</tr>
<tr>
<td>17.</td>
</tr>
<tr>
<td>18.</td>
</tr>
<tr>
<td>19.</td>
</tr>
<tr>
<td>20.</td>
</tr>
<tr>
<td>22.</td>
</tr>
<tr>
<td>23.</td>
</tr>
<tr>
<td>25.</td>
</tr>
</tbody>
</table>

---

# TABLE OF CONTENTS,—NOS. III AND IV.

**EDITED BY WILLIAM S. KING, BOSTON, MASS.**

**(Editor of the Journal of Agriculture.)**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
</tr>
</tbody>
</table>
10. Experiments in Feeding Milch Cows. By C. L. Flint .......... 127
11. Experiment in Feeding. By John Brooks ...................... 135
12. Comparative Productive Economy of the U. S. By C. C. Collin, 129
15. Farming in Kentucky. English Stock .......................... 156
16. Study the Insects that damage the Farmer. *Gen. Farmer* .... 158
17. Entomology. By Prof. S. S. Haldeman ......................... 161
18. Fruits. Duration of Varieties. By Dr. W. D. Brincklé ........ 164
19. The Agriculture of France. By Dr. A. L. Elwyn ............... 169
20. Experiments in Reclaiming Swamps. By J. W. Proctor ......... 178
21. The Jersey Cow. By Editor ..................................... 183
22. Squashes, &c. By Thaddeus William Harris ................... 189
23. A Comparative View of the Agricultural and the Manufacturing Interests in the United States. By B. Munn ................. 193
25. Never too late to learn. *Cincinnati Columbian* ............. 214
26. Great Flouring Mills. *Harrisburg Union* .................... 216
27. The American Reapers and Mowers. By Editor .................. 217
29. American Forest Trees ........................................... 234
31. Notice of Address of F. P. Blair. By Editor .................. 236
32. Illinois Agricultural Show. By J. A. Kennicott ................. 243
33. New Hampshire Agricultural Show. By J. O. Adams ............. 247
34. List of Agricultural Books. By Editor .......................... 249
35. List of Agricultural Papers in the United States. By Editor ... 263
36. Constitution of the United States Agricultural Society ....... 265
37. Officers of the " " " " ........................................ 269
38. Life Members of the " " " " ..................................... 270
39. Annual Members of the " " " " .................................... 271