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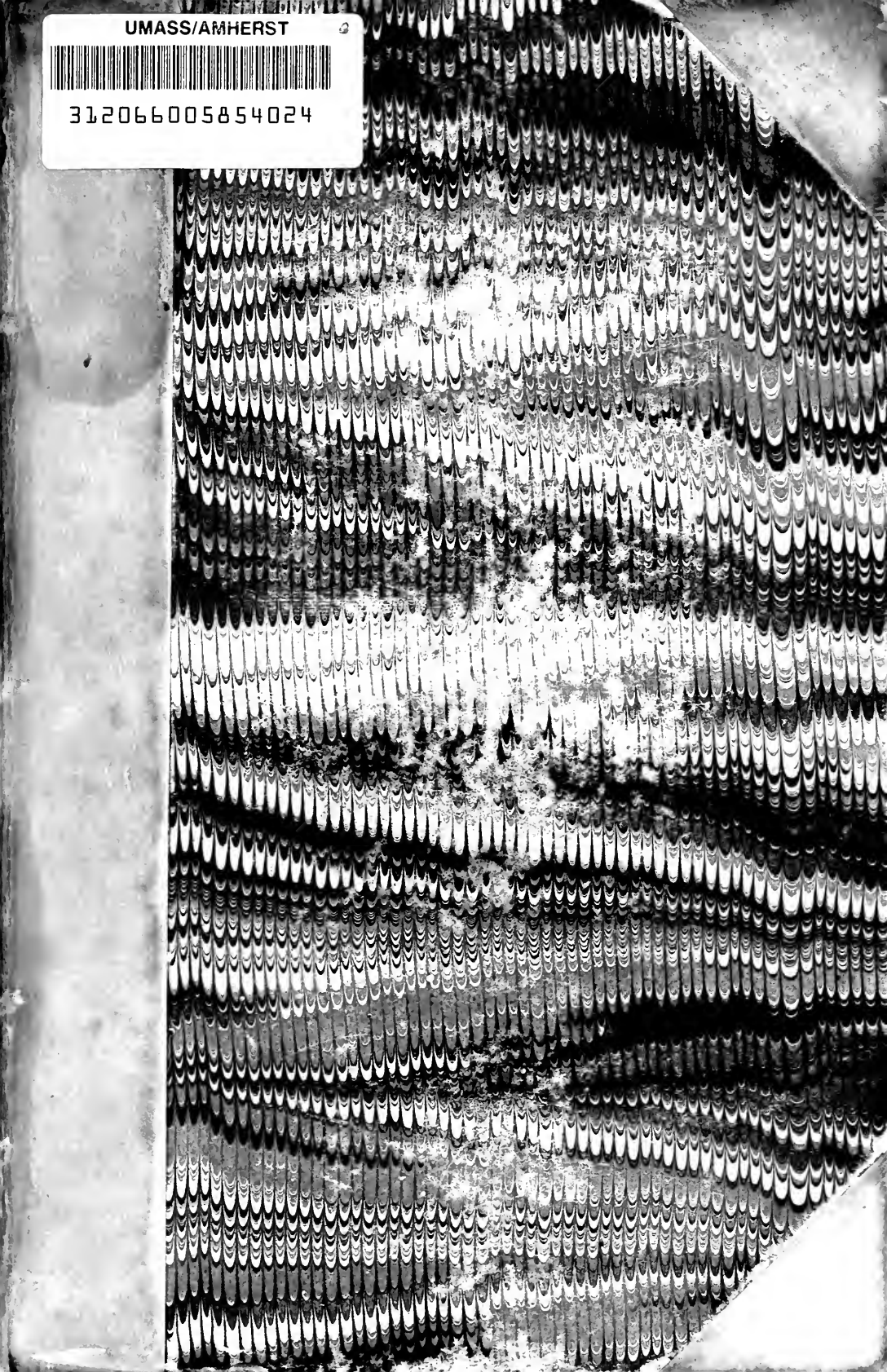

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FIFTH

ANNUAL REPORT

OF THE

AMERICAN INSTITUTE.

Made to the Legislature April 20, 1847.

ALBANY:
C. VAN BENTHUYSEN AND CO., PUBLIC PRINTERS.

1847.

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1846

STATE OF NEW-YORK.

No. 151.

IN ASSEMBLY,

April 20, 1847.

ANNUAL REPORT

Of the American Institute.

NEW-YORK, *April 15th*, 1847.

To the Honorable

WILLIAM C. HASBROUCK,

Speaker of the House of Assembly.

SIR—I herewith transmit the annual report of the American Institute of the city of New-York, for the year 1846.

Respectfully your ob't servant,

T. B. WAKEMAN, *Secretary.*

24736

IN ASSEMBLY.

APRIL 22, 1847.

Resolved, That the same number of copies of the report of the American Institute be printed that was ordered of the Transactions of the State Agricultural Society, to be distributed in the same manner and for the same purposes; and when desired by those who are to receive the copies of the said report, the same to be bound with volumes of the said Transactions, without any increased charge therefor, under the direction of the same committee having the Transactions in charge.

By order,

P. B. PRINDLE, *Clerk.*

REPORT

Of the committee of the Assembly on colleges, academies and common schools, on an agricultural and scientific school and experimental farm. Made April 24, 1847.

Mr. Burchard, from the committee on colleges, academies and common schools, to which were referred sundry petitions of the inhabitants of this State, praying the passage of a law to establish an agricultural school and experimental farm, submits the following

REPORT:

That your committee have given the subject that consideration which the intense and varied interest of agriculture would seem to demand from their hands.

It is a conceded point among the liberal and enlightened portion of the community, that those who till the soil should be enabled to draw copiously from the rich streams of modern science. For to the agriculturists are, in a great measure, committed the destinies of the country. Then how vitally important that they transmit, unimpaired, the dear pledges of the nation's hope, her civil and religious institutions, to posterity!

But the evidence of facts and experiments developed by agricultural bodies, proves to a demonstration that farming is vastly in the rear of the other great branches of national industry. The refinement and civilization of the present age, appear to make it the imperative duty of government to cherish and promote a diffusion of knowledge amongst all classes. With just pride a citizen of New-York can look on her admirable and unsurpassed system of public instruction, the model and emulation of her sister States.

It is with deep regret your committee are compelled to announce the mortifying fact, that agricultural science has never been admitted into her literary institutions, or taught by persons qualified, by lectures and experiments, to instruct our ingenuous youth in rural economy. But no man of any pretensions whatever, will deny but that improvement in agriculture is followed by comfort and affluence in the State; and in a growing population, where cities and villages rise like magic, and where investments in manufactures and commerce receive a gratifying remuneration, an auspicious moment seems to have dawned for laying the foundation of a school which will be appropriate as well for the agriculturists as those who aspire to a liberal and general course of literature. Its primary but not exclusive object should be to impart a theoretical and practical knowledge of husbandry; for melancholy experience teaches that ninety-nine farmers out of a hundred are more inclined to justify and abide by the course of ordinary routine than to search after improvement. How few appeal to science, propose questions of experiment, and search into causes?

Among those who profess to be enlightened, thousands are ignorant of the chemical principles that are based in the knowledge of the pabulum or food the plant draws from the earth on which it grows, and the substances which it returns in the shape of manure.

The physiology of plants, principles of agricultural chemistry, involving the wide range of manures, rotation of crops, and alternate culture, have called to European Universities the most illustrious teachers, who esteemed an agricultural chair, the highest of all scientific honors.

An analysis, showing the component parts of soils, as lime in the forms of chalk, marl, gypsum, alumina, silica, iron, and the other metals as exhibited in their different oxides, the various phosphates, &c., the nature and effects of HUMUS, and its different combinations with the elementary earths and the atmospheric influences, have been entered in the all-glorious field of academical instruction.

Your committee are induced to believe, that a concurrence of public sentiment or at least the semblance of it, has decided in favor of the establishment of a school for rural economy. At the first appearance it would seem strange, that a population whose main pursuit is the culture of the soil, should be unprovided with the means for the acquisition of agricultural science, and the accessary departments of learning necessary to constitute a well educated and disciplined mind.

An agricultural school should be made liberal and enlarged in its course of instruction, and not inferior in point of intellectual requisition and celebrity to the boasted seats of classical and mathematical literature. It should be conducted by well qualified professors, who can fill the chairs with ability to enlighten their pupils in whatever is necessary to the man that would become a practical and scientific agriculturist.

Your committee believe the whole business should be placed under the management of competent and responsible persons, and in a position that would ensure its success. A professional chair should be devoted to lectures and lessons in the French, Spanish, and German languages combined, with elocution and composition.

Another department should be occupied in chemistry, geology, botany, and the accessary branches to agriculture, including the natural history of animals beneficial or noxious to plants or trees, but prominently, general chemistry in its immediate application to agriculture, physiology and meteorology.

A professor should be appointed for the mathematical and physical sciences, such as arithmetic, elements of algebra, geometry, trigonometry, practical surveying, civil engineering, natural philosophy, astronomy and general physics.

Animal pathology and veterinary medicine are subsidiary to agriculture, and the amount of capital invested in the breeding, rearing and maintaining the various domestic animals, is great in this country.

This science may be regarded as a valuable auxiliary and elucidator of the facts of human medicine. A veterinary, with all the accompaniments of lecture rooms, museum, hospital, laboratories and forges, should be open to the students.

In the agricultural department proper, the general principles of farming and horticulture, including the cultivation of the vine, the breeding of cattle, the growing of wool, the raising of horses, the production of silkworms, the tillage of all cereal, culinary, coloring, and esculent plants that vegetate in the northern latitude, the arrangement and superintendence of farms, their situation, and book keeping, should have their appropriate place in the general plan of education.

An experimental farm of not less than 200 acres, composed of varied soil, on which suitable dwelling houses should be erected, may be purchased by the persons selected to carry out the object, in fee. The investment should be judicious. No attempt to imitate some of our higher schools that have had private endowments and legislative bounty vested in brick and mortar, a fatal mistake for those who have had the guidance of our first and most celebrated colleges.

Your committee cannot, without deep solicitude, leave this part of the subject, without adverting to the fact that the greatest universities in Europe are renowned for their refined taste and generous zeal for science, but are destitute of stately palaces and expensive structures.

The trial farm may be under the superintendence of a scientific and practical farmer, whose duty shall be to watch over the moral and physical conduct of the pupils residing within the precincts of the department. He should be very conversant with rural economy, and teach the pupils the practical operations of farming, and keep a vigilant eye on them in the refectories and dormitories, and govern this little commonwealth in like manner as a prudent father directs his household. Let him keep an accurate account of the incomes and expenditures of the establishment.

A matron who is familiar with domestic economy and the various operations of a dairy, and who is estimable for her general information and amiable and motherly deportment, may take charge of the household and dairy department.

The time of the pupils should be divided between manual farm labor and study. The superintendent here has a theatre on which to display his precepts and examples. The field is after all the great laboratory on which THEORY and practice may be successfully combined.

The experimental farm, if cultivated upon the best principles of agriculture, and with a view to profit, will attract the attention of the public. Here new and improved farming utensils will be received on trial, and their merits and defects duly appreciated. A museum and general depot will here unfold its rich treasures, and valuable specimens congregated from every part of the habitable globe. A collection of seeds, grain and roots, both foreign and indigenous, nay more, those in the process of acclimation, should be stored in the

granaries and cellars. On the one hand, as the appropriate specimens of the vegetable kingdom for lectures; on the other, for sale. A work shop with great propriety may be attached to the school, in which the industrious student may have an ample opportunity to be relaxed from his intellectual toils, and develop his physical constitution to the highest perfection in the fabrication of rural implements, whereby much of the evil may be avoided that grows out of a sedentary life; every part of the body may become invigorated, its health promoted, and prompt and vigorous for every service. What can be of a more priceless value to the young agriculturist than a strong arm and manly form; nerved to grapple with the labors of the field; a gymnasium incomparably more available to his person and state than all the boasted games of antiquity.

Economy and convenience will require a division of the farm into arable land, meadows, pastures, fields selected for experiments, wood land, orchards, vineyards and nurseries. The plow land should be cultivated according to the best systems of rotation and succession, that the students may have specimens of the varieties of the system. A stock of cattle of different kinds, domestic and foreign, together with the varieties of other animals found useful for man, must have their appropriate space in the arrangement of the farm.

For the illustration of lectures in terraculture, a variety of soils should be found in the cabinet, their analysis and specimens of the means of their amelioration in different cases. The woods arranged in the forms of a library, and collections of natural history would be extremely useful to the institution.

Your committee invite the attention of all the industrial classes to this momentous suoject, aware of the vast importance of a grand system of national education in the scientific practice of agriculture, which will double the value of estates, and place by its results the whole country in a position, which, under a beneficent Providence, would defy contingencies.

It is no visionary scheme. The example of civilized Europe is before us; the agricultural school of Moeglin, on the Oder, formerly under the direction of the immortal Von Thaer, and patronized by the King of Prussia, shows how a *pattern farm*, when embellished with a school devoted to agriculture, may improve, and by its salutary example, convert a barren district, a country of heath into fertility and plenteousness.

The school that has demonstrated the practicability of the scheme, is Stroegland, in Wurtemburg. Here the pupils live *en famille* with their superintendent, and are instructed by different professors in the theory and practice of agriculture, and the arts and sciences that elevate and adorn rural life.

The sons of high lineages and wealth, there study and labor with the child of want; and in order to give a stimulus to industry, each student receives a remuneration equivalent to his labor.

A brighter day is dawning on agriculture in England, Belgium and France. Witness the professional police among the different countries and provinces in those enlightened kingdoms. Feudal tenures and oppressive burthens on the productive classes are gradually vanishing before the lights of science and reason, and man bound down by the wrongs of centuries of ignorance and tyranny, is beginning to assume the dignity of his nature. Even royalty, cloyed with empty pomp and pageantry, retires into the shades of rural sequestration, and calls around him associations of learned and practical farmers, and courts pre-eminence in conversations and deliberations.

Your committee need not stop here. The experience of a century has proved the advantage of a scientific education for the practice of agriculture. Indeed, there is no university in Europe without a chair devoted to rural economy; and it may not be deemed impertinent to remark, that a contemplated plan for agricultural education is foreign to our other literary institutions, fostered by the bounty of the State or supported by private munificence. Their course of instruction, however admirable for the foundation of general literature and professional avocations, is not the appropriate sphere to form the habits of the farmer, and fit him for the peculiar and active life to which he is destined.

But it may perhaps be said, that the agriculturist needs no theory, but his acquisitions should be moulded by the usages and routine of husbandry. Can any one who is imbued with the liberal and enlightened spirit of the age, array *practice* in opposition to *theory?* What is theory but a generalization from facts, or a knowledge of the laws that link effects with their causes? Let the idea be illustrated. The *practice* of agriculture will lead the operator to spread his fields with a great quantity of lime. This, for a short period, will render the soil more actively fertile, but ultimately it will exhaust it

in the ratio of production. Science steps in and unfolds the secrets of nature, whose uniform and eternal law teaches that the mineral accelerates the solubility of the ordinarily slow decaying vegetable matter, and impoverishes the land in a few years. But if left to itself without the stimulating manure, it will raise larger crops for many years. Science teaches that the wheat plant is composed of certain organic and inorganic constituents, which must have existence in the soil in proper relative quantities, but in case any one of these fail, the plant will not grow to perfection. Practice does not learn this, though it is conscious of the mere fact that it will grow well or ill or not at all.

Your committee, after having made a careful investigation of this momentous subject, have come to a conclusion that an agricultural scientific school would be an invaluable source of instruction to the growing youth of the present age, and subsidiary to the proper development of the wealth and intelligence of the farming interest.

The noble and successful efforts which the American Institute has put forth in the cause of agriculture and the mechanic arts, have reflected the highest commendation on this infant institution and have spread the skill and enterprise of our industry throughout the civilized globe.

Your committee would recommend the erection of the establishment under the auspices of the American Institute, which would seem favorable for its foundation and fostering protection. Among the innumerable advantages that would flow from its proximity and connection with that body, may be enumerated, an extensive library, repository of machines and implements of agriculture, and a collection of seeds and plants.

The dense and opulent population in the neighborhood of our commercial emporium, its easy access, favorable climate, varied soil, vast and extended intercommunication by inland trade and foreign commerce, may rouse the public spirit and munificence of our fellow citizens in that quarter, indicate that region as favorable to the location of the *agricultural school and model farm.*

These considerations, in the judgment of your committee, present strong reasons in favor of the application, and such as they are im-

pressed, will have their due weight with the representatives of a liberal and enlightened people emulous to extend the confines of education, and develop the resources of the State. Penetrated with these sentiments, your committee, with this report, have prepared a bill, which they now ask leave to bring in.

AN ACT

To authorize the American Institute of the city of New-York, to establish an agricultural and scientific school.

The People of the State of New-York, represented in Senate and Assembly, do enact as follows:

SECTION 1. The American Institute of the city of New-York, is hereby authorized to hold, purchase and convey real estate and personal property, for the purpose of establishing thereon an agricultural and scientific school, and making an experimental farm, to be within the jurisdiction of the State, and at a convenient distance from New-York city, and not to exceed in value dollars.

§ 2. The said Institute shall engage in the business of establishing on said real estate, an agricultural and scientific school, in which shall be taught the theoretical and practical science of agriculture, and the sciences connected therewith.

§ 3. There shall be elected annually, and in the same manner as the trustees of the said Institute, at the annual election thereof, five persons, who shall constitute a board of agriculture of the American Institute.

§ 4. It shall be the duty of the trustees, and the said members constituting said board of agriculture, to superintend and direct said school, to appoint the professors, teachers, and all the persons necessary to conduct the said school, and the farm connected therewith.

§ 5. The trustees and members of the board of agriculture, shall have the power to make by-laws for the government of the said school, and the regulation of the experimental farm.

§ 6. Diplomas or honorary testimonials may be granted by the said school to students under its charge, in such form as it may designate.

§ 7. The said school shall be subject to the visitation of the Regents of the University of this State, in the same manner, and to the same extent, as the various colleges or seminaries in this State.

§ 8. Whenever the said school shall have been organized, and an experimental farm shall have been purchased by the trustees of the said American Institute, the annual sum of
dollars shall be appropriated to the said school and farm, for the exclusive benefit thereof.

§ 9. The Legislature may at any time, alter, modify or repeal this act.

OFFICERS OF THE AMERICAN INSTITUTE, 1846, '47.

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REPORT

Of the American Institute, for the year 1846.

The Trustees are gratified to be able to state, that the general operations of the Institute for the year, both in agriculture and the arts, have been crowned with signal success.

In its regular progress the most beneficent effects have been felt and acknowledged by numerous correspondents, associated and individual; and by the press generally in every part of the country. The plan of carrying out the objects of the Legislature, as described in the last report, has been pursued, to which reference is made. This will supersede the necessity of making remarks at this time.

As the receipts are, in a degree, a true index of successful operation, the first reference will be to the accounts of the year. In the accounts of disbursements in promoting industry and improvement in the departments of agriculture and the arts, it should be borne in mind that our whole revenue, with the exception of the State bounty of $950, and the Van Schaick donation of $1,000, has been derived from membership, added to the trifle of twenty-five cents for each grown person, and twelve and a half cents for children admitted to the fair. This presents an example of economy, industry, liberality and devotion to the public good, that challenges a comparison with any institution in this or any other country. If mercenary motives had prevailed, there would have been no free library! no free lectures! no farmers' club, with even members paying nothing! no free repository where the ingenious inventor could show the world the fruit of his genius; all demanding expenditures every day of the year. Contributions would have been levied on all, and expended on fat offices.

In order that the benefits of the Annual Fair might be made available to the great public, and a knowledge of improvements diffused, delegates were invited from societies, and also citizens far and

wide: men in office, distinguished individuals, literary, scientific, &c., so that with the non paying, corresponding, and regular members, exhibitors and their families, embracing four-fifths as is estimated of all who entered the fair, were on the free list.

The following account embraces the financial affairs of the Institute for the year.

RECEIPTS AND EXPENDITURES.

The receipts and expenditures of the American Institute of the city of New-York, from February, 1846, to February, 1847, have been as follows:

Receipts.

To cash received from sales of tickets at Castle Garden,		$13,581 50	
	Less, counterfeit money,	26 00	
			$13,555 50
do	received at cattle show,		174 00
do	rents of stands in selling department,		236 50
do	sales of lumber used at the exhibitions,		346 00
do	contributed (from members),		1,784 50
do	from Hon. M. Van Schaick, for silk premiums (part of $1,000),		100 00
do	Comptroller State of New-York, under act of May 5, 1841,		950 00
			$17,146 50
Balance on hand at the date of the last report, Feb. 1, 1846,			6,511 74
	Total,		$23,657 24

Expenditures.

Payments on account of the 19th Annual Fair of the American Institute.

By Printing and Publication Com.

Printing circulars, invitations, tickets, blanks, handbills, badges, &c.	$415 30	
do Addresses,	116 72	
do proceedings of convention of farmers, gardeners and silk culturists,	108 97	
do list of premiums,	68 90	
Newspaper advertisements,	254 46	
Flags for stages, bill posting and contingent expenses,	156 00	
		$1,223 99

By Com. of Arrangements.

Lumber, carpenters' work and ironmongery at Castle Garden,	$757 19	
Plumbing and lead pipe for steam boiler,	61 98	
Steam power and fuel,	384 12	
Painting and glazing show cases and transparencies,	58 92	
Lighting,	286 28	
Clerk hire, police, day and night watch, assistants and laborers,	894 75	
Lumber and carpenters' work at the cattle show,	401 26	
Ticket seller, door keepers and laborers at cattle show,	37 50	
Horticultural room expenses, including printing Horticultural report,	271 68	
Petty expenses, including a new dynamometer for the testing of plows and Taylor's nautical experiments,	125 35	
		3,279 03

By Finance Com.

Ticket sellers and door keepers,		212 50

By Com. on Rooms, Music, &c., for Anniversary Address.

Rent of Tabernacle,	$80 00	
Carried forward,	$80 00	$4,715 52

Brought forward,	$80 00	$4,715 52
Music for Tabernacle,	25 00	
Use of platform,	9 00	
		114 00

By Com. on Refreshments.

Refreshments for managers while detailed on duty, and guests from a distance,	$374 00	
Refreshments for bands, &c., from navy yard and Governor's Island, whose services were gratuitous,	97 98	
		471 98

Miscellaneous Bills.

Rent of Castle Garden 17 days at $75 per day,		1,275 00
Room for convention of farmers, gardeners and silk culturists,		20 00
Fireworks,		210 00
Violincello presented to the blind band,		30 00
Cloth for orators,		52 50
Boat and carriage hire for bands,		16 00

By Premium Com.

Gold and silver for medals,	$1,339 26	
Silver cups, &c.,	586 36	
Engraving medals, cups, &c., (in part,)	200 00	
Cash premiums, (in part,)	50 00	
New diploma on steel plate, and printing,	583 00	
Recutting seal,	5 00	
Books for premiums,	147 32	
Filling up diplomas, (in part,)	44 20	
		2,955 14
		$9,860 14

On account of the Repository and Library of the American Institute.

Salary of superintending agent,	$1,250 00
do recording secretary,	212 50
Carried forward,	$

Brought forward,	$	
Salary of clerk,		700 00
do assistant librarian,		300 00
do messenger,		175 00
Insurance on library and fixtures,		30 00
Fitting up new apartments for the repository, and alterations in the library,		439 30
Books for library,		454 19
Binding for do		63 03
do Transactions N. Y. S. Agricultural Society,		106 25
Freight of books,		6 00
Mounting maps,		2 50
Subscription to Colman's Agricultural Tour,		80 00
Newspaper subscription, including papers for distribution,		71 17
Advertising,		37 20
Printing circulars, blanks, &c.,		65 12
Paper and stationery,		14 88
Light,		7 50
Fuel,		41 50
Furniture lamps, and brackets, &c.,		40 63
Agent's expenses to Albany,		21 61
Petty cash expenses—Postage, cleaning, repairing, &c.,		224 96
Total,	$4,343	34

RECAPITULATION.

Receipts.

To cash received from January 20, 1846, to January 20, 1847,	$16,196	50
" Comptroller State of New-York,	950	00
	$17,146	50
Balance on hand at the date of the last report, February 1, 1846,	6,511	74
	$23,658	24

Expenditures.

By disbursements, claims against the 17th Annual Fair, 1844,	$30 00	
" balance claims, 18th Fair, 1845,	175 54	
" expenses 19th Fair, 1846,	9,860 14	
" " Repository and Library	4,343 34	
		$14,409 02
Balance on hand (of which $5,000 has been invested in the stocks of the city of New-York at six per cent interest,)		$9,249 22

Although the means of promoting agriculture by the Institute have been well adapted for the purpose, by Farmers' Clubs drawing practical truths and facts from men of experience and publishing them to the world; by enquiries made of numerous correspondents in various localities; by the distribution of seeds, plants, grafts and cuttings; by the prompt supply of the best publications in Europe and America, in various languages, placing them in the reach of all; by a daily exhibition of many of the machines and implements employed in agriculture and horticulture; by one great Annual Fair, or Exhibition of all the improved instruments used either on the farm, or in the garden; with the finest fruit, flowers, and vegetables, culled from an immense area of country, many of them cultivated with unwearied industry and care, stimulated by the promised premium; and by cattle shows and plowing and spading exhibitions; still the Trustees are impressed that something essential after all, is wanting. And in their opinion nothing essential to the advancement of this paramount interest should be withheld. The farming interest embraces four-fifths of the whole people of the United States, whose votes must determine the fate of our Republic; the security of the lives, liberties, and property of the present generation and the myriads that will succeed, depend on them.

No effort therefore should be spared to raise the moral and intellectual character of the farmer. Civilization and agriculture advance *pari passu* with improvements from the savage state to the highest civilization. Agriculture civilizes and christianizes the savage. The minister of agriculture and commerce of France, says, "able overseers and experimental cultivators must go forth and give examples justified by experiments, conveying knowledge to all quarters and reaching the youth." How shall agriculture, both an art

and a science, be taught in America, but in schools? and how effectually taught but by experience on the land, and with instruments suited to the purpose? Youths must be instructed and trained and then they will go forth in all directions qualified, practical cultivators. Like apprentices to the mechanic branches who leave their masters instructed, and are entitled then to have *full wages, or be themselves masters at once.*

There is not a single well established school with suitable professors, grounds, apparatus, instruments of husbandry, breeds of animals and requisites for scientific and experimental teaching, in all the wide domains of our State. Millions on millions are expended on education, reaching all classes except the farmer. Knowing his numerical strength, do those who rule, fear to add the power of knowledge? Would a small appropriation by our Legislature to ensure a trial, afford a dangerous precedent? More than fifty years ago Gen. Washington recommended the application of the national purse for the encouragement of agriculture, and although there was a universal assent, not a dollar under any legislative act has been directly applied to this day. The trustees most respectfully invoke the influence of the State Society for the establishment of one such school in or near the city of New-York, under the charge and care of the American Institute.

Statement of premiums awarded in the agricultural department for the year 1846:

Gold Medals,	6
Silver Cups,	57
Silver Medals,	50
Cash,	110
Diplomas,	21
Vols. of Books,	137

The trustees feel authorized in saying that the report of the Institute for 1846, contains more valuable information than is to be found any where condensed, on the subject of agriculture especially; for which the Institute is indebted to the united contributions of many practical and scientific agriculturists. The immense labors of the chemists of the world in reference to agricultural chemistry, will be here found, brought to an intelligible and practical result, so far as those labors have up to this time been useful. What is here contained relating to the knowledge of soils and to the making and application of every kind of manure, is of great value; containing much

solid instruction capable of being immediately applied by almost every farmer for the great benefit of his land, and increase of his crops.

The following is an extract from a letter of Joseph Cowdin, Esq., the Consul of the United States at Glasgow, Scotland, written in the spring of 1846, in relation to the introduction of our methods of cooking Indian corn, which he has zealously performed agreeably to the request of the Institute, of which he is, and has long been an active and intelligent member. This is but one instance of the effort and extent of the exertions of the Institute.

The efforts of Mr. Cowdin have, no doubt, done much to remove the prejudice which in Europe prevailed against Indian corn, on account of their ignorance of the proper methods of cooking it. The consequence of which is, increased demand and price abroad. A communication on Indian corn, with the best modes of preparing it for use, will be found annexed. We forbear in this report going into particulars. The appended papers are full of facts of momentous bearing, which for want of time we leave to the good sense of the reader who will draw his own inferences.

"I am and have for some time been devoting my leisure time in endeavoring to introduce into this community the great universal staple of America, 'Indian corn,' about which the people here know nothing, and I am pleased to say, have succeeded in removing the deep rooted prejudice which existed, by frequent exhibitions of corn bread in every variety of form. It may now be said to be fairly and permanently introduced into the charitable institutions and prisons of this city, which will give it a character and confidence throughout the United Kingdom of Great Britain and consequently throughout the old world, which will open new markets for this great and valuable staple. I rejoice in this, as it will benefit that noble and honorable class of citizens of our beloved country, the farmers, and by no possibility injure any other branch of industry.

"The South have their great and valuable staple of the manufacturer, Cotton; but for capability of production, this is restricted to latitude and longitude; not so with corn, it may be raised throughout the length and breadth of our land with great facility and comparative trifling expense."

In conclusion is submitted a statement relative, to the quantity of Indian corn raised in the United States, the value of the same, and the amount exported, furnished us by Mr. Edwin Williams.

According to the United States Census, of 1840, and the result of Professor Tucker's inquiries as to the prices in different parts of the country, the quantity of Indian corn raised in the United States in 1839, and the value of the same, was as follows:

	Bushels.	*Value.*
New England States, ----------	6,992,909	$4,794,893
Middle States, ----------	39,946,213	23,356,515
Southern States,----------	94,998,255	44,994,506
South Western States,----------	129,741,093	38,259,033
North Western States,----------	105,853,405	21,186,681
Total United States,------	377,531,875	$132,591,628

The average value for the United States, according to this statement, is about thirty-five cents per bushel.

The blades or stalks of Indian corn, as is well known, form an excellent fodder for horses and cattle; and which, estimating twenty pounds for every bushel of grain, amounts to 3,775,000 tons; worth, by Professor Tucker's estimate, $37,750,000.

Thus the value of the crop of Indian corn in the United States in 1839, may be stated to have exceeded one hundred and seventy millions of dollars, an amount greatly exceeding in value that of any other crop raised in this country. The Secretary of the Treasury estimates the total value of the crop of cotton grown in the United States, in 1846, on the 1st of December, 1846, at $73,150,000, and that of Indian corn at $314,871,826.

The crop of maize, for 1845, was estimated by the Commissioner of Patents in his annual report, to have amounted to 417,899,000 bushels, and on that basis it may be assumed that the crop of last year, 1846, was at least 425 millions of bushels. This quantity at an average value of fifty cents per bushel would amount to $212,500,000. This enhanced value it seems justifiable to assume in the present estimate, taking into consideration the prices of Indian corn as well as provisions, (which are in some respects the product of this grain,) in the principal marts of the United States since the last harvest.

I am induced to believe that at least one-fourth part of the crop of Indian corn raised in the United States, is sold by the farmers to non-producers, for domestic and foreign consumption, leaving three-fourths of the crop, for the use of the farmers themselves. Estimating one-fourth of last year's crop at one hundred millions of bushels, and sixty cents per bushel as the average price for the whole United States, or for all the different markets in which it is sold by the farmers, it results that the amount of sales of Indian corn by them to purchasers of all kinds, is sixty millions of dollars, being twenty-five millions of dollars more than the same crop would have brought in 1840.

It is difficult to estimate the proportion of the crop which has been and will be exported to foreign countries. Previous to the year ending June 30, 1846, the quantity of Indian corn and meal exported did not average a million and a half of bushels annually. The actual quantity of each exported for the four years and nine months ending June 30, 1845, was as follows:

Indian corn,----------	3,474,109 bushels.
Indian meal,----------	1,132,749 barrels.

The total *value* for the year ending June 30, 1846, (the *quantity* not being yet given,) compared with the previous year, shows a large increase, as follows:

Exports.	1846.	1845.
Indian corn, ----------	$1,186,663	$411,741
Indian meal, ----------	945,081	641,552
Total,----------	$2,131,744	$1,053,293

Increase for 1846, $1,078,451, equal probably to about two millions of bushels of Indian corn and meal, and making the total quantity exported in that year, about four millions of bushels, including both corn and meal.

If we estimate the surplus of Indian corn which we can spare for export to foreign countries at four per cent on the crop of last year, which exports however are liable to be checked by the scarcity of vessels to transport the grain and the high prices of freight, we have seventeen millions of bushels of maize for export; or taking less than two-thirds of this quantity, we may ship to Europe, and elsewhere, twelve millions of bushels of maize and Indian meal, which

at eighty cents as the average value amounts to $9,600,000. The value of the same exported for the year ending September 30, 1840, was as follows:

Indian corn, ----------	$338,333
Indian meal, ----------	705,183
Total of both,----------	$1,043,516

The exports for that year bring about the annual average in value for a series of years. It is thus shown that we may calculate on an actual gain to the country from the exports of Indian corn and meal for the current year, over the average of former years, (when this valuable grain attracted but little attention in Great Britain and Ireland, as the food of man,) of at least eight millions of dollars.

I cannot omit the present opportunity to award the credit, which within my own knowledge, is due to Doctor J. S. Bartlett, editor of the Albion of this city, and to J. S. Cowdin, Esq., U. S. Consul at Glasgow, for their efficient exertions in calling attention to the importance of introducing Indian corn as a cheap food for the British nation. The services of Mr. Cowdin should, as I have no doubt they will, be fully set forth by the Institute, and Doctor Bartlett, in a published letter addressed to Lord Ashburton, when in 1842 he visited the United States as a special Minister to this country, brought forward important facts and arguments on the proposed introduction of maize to supply the deficiencies of the crops of Great Britain and Ireland, without reference to the failure of the potato crop, a circumstance which has since brought the subject home to all classes of British subjects.

All which is respectfully submitted on behalf of the trustees.

SHEPHERD KNAPP, *Vice Prest.*

H. MEIGS, *Recording Secretary.*

T. B. WAKEMAN, *Corresponding Secretary.*

American Institute, March 9th, 1847.

STATEMENT

Of the Receipts and Expenditures of the American Institute of the city of New-York, from 1839 *to* 1845, *for Agriculture, Commerce, Manufactures and the Arts.*

	Receipts.					*Expenditures.*		
	Repository, year ending April.	State of N. York.		Annual Fairs.	Total.	Repository, year ending April.	Annual Fairs.	Total.
1840.....	$1,692 82	.....	12th, 1839	$8,831 41	$10,524 23	$3,472 91	$7,631 41	$11,104 32
1841.....	1,993 86	.....	13th, 1840	6,581 25	8,575 11	3,426 25	5,128 30	8,554 55
1842.....	1,622 50	$950	14th, 1841	7,050 00	9,622 50	4,239 00	5,571 31	9,810 31
1843.....	1,339 64	950	15th, 1842	6,741 75	9,031 39	2,889 83	5,825 75	8,715 58
1844.....	1,259 00	950	16th, 1843	8,808 80	11,017 80	4,011 32	6,247 52	10,258 84
1845.....	1,590 65	950	17th, 1844	10,249 71	12,790 36	3,542 35	7,484 63	11,026 98
1846.....	1,883 50	950	18th, 1845	12,600 43	15,433 93	4,465 21	8,683 49	13,148 70
Feb. 1847.....	1,784 50	950	19th, 1846	14,312 00	17,046 50	4,343 34	9,860 14	14,203 48
	$13,166 47	$5,700		$75,175 35	$94,041 82	$30,390 21	$56,432 55	$86,822 76

STATEMENT

Showing the number of Premiums awarded to the Agricultural Department from 1835 *to* 1846.

Year.	Gold Medals.	Silver Cups.	Silver Medals.	Cash.	Diplomas.	Vols. of Books.
1835,....	1	....	4	....	17	....
1836,....	3	....	9	....	28	....
1837,....	2	....	15	....	39	....
1838, ...	4	....	21	....	42	....
1839,....	6	13	17	....	70	....
1840,....	2	18	12	....	60	....
1841,....	6	17	31	....	71	26
1842,....	3	25	34	....	37	82
1843,....	4	26	28	....	48	93
1844,....	1	29	28	$70	46	120
1845,....	5	35	44	100	38	128
1846,....	6	57	50	110	21	137
Total,	43	221	293	$280	517	586

PREMIUMS

Awarded by the American Institute of the city of New-York, from 1835 *to* 1846.

Year.	Gold Medals.	Silver Cups.	Silver Medals.	Cash.	Diplomas.	Vols. of Books.
1835,....	16	....	91	....	340	....
1836,....	27	....	125	....	249	....
1837,....	29	....	126	....	308	....
1838,....	26	....	167	....	396	....
1839,....	27	13	124	....	384	....
1840,....	12	18	60	....	331	....
1841,....	17	19	118	....	336	26
1842,....	12	26	88	....	439	82
1843,....	17	27	91	....	439	104
1844,....	20	29	104	$150	444	120
1845,....	34	35	181	135	356	131
1846,....	43	58	263	110	485	137
Total,	280	225	1538	$395	4507	600

REPORTS

Of the Managers of the Nineteenth Annual Fair of the American Institute.

Preliminary arrangements had been made for holding the 19th Annual Fair at Niblo's Garden; the destruction of these premises by fire in September last, made it necessary to obtain some other location. Castle Garden was selected, which is at the southern extremity of the city, the avenues leading to it being generally much crowded by the business operations of the city, apprehensions were entertained that the receipts from visitors would, from these causes, be diminished. It is gratifying to say that these apprehensions proved entirely groundless. The number of exhibitors was 2,343 an increase beyond any former Fair; 54,326 admissions to the exhibition were paid for, according to the receipts; and it is computed that, in the aggregate, there are four free admissions to one that is paid for; which gives 260,000 as the total number of visitors. It will be borne in mind that all the members and their families, exhibitors and their families, delegates from other States and similar institutions; distinguished men from all parts of the Union; distinguished men from all parts of the world, who may be in New-York during the Fair, members and officers of the common council, judges of all the courts, charitable schools, committees of judges of the Fair, &c., comprise the free list.

The expenses attending this Fair were materially augmented, in consequence of the change of location, and the entire loss by the conflagration of Niblo's Garden of all the permanent fixtures which were stored there.

In various branches of art and manufactures, there was a perceptible improvement from the last year, and this has been constantly the case from the commencement of these exhibitions, which alone serves to illustrate their extreme utility. For a full detail of all the textile productions, we refer to the accompanying report of Mr. C. C. Haven, chairman of the committee on that department.

The management of these fairs is confided by the Institute, to a Board consisting of twenty five members, elected at their annual meeting. It will be difficult to appreciate the amount of labor necessarily involved in the discharge of this duty, which is performed gratuitously. But it is pleasing to be able to say, that thus far, through a period of nineteen years, this annual labor has been discharged by various members of the Institute with promptness; the members of the Board moving on together in the most perfect harmony, as they firmly believe for the permanent benefit of the remotest parts of the Union. It would be unjust in these remarks, should we neglect to acknowledge much assistance derived from the collateral aid of distinguished individuals from year to year. The thanks of the Institute are particularly due to his Honor A. W. Mickle, mayor of the city, for his kindness, and the facilities unhesitatingly afforded by him during the last Fair.

To those of our fellow citizens, who compose our committees of selected judges, we tender on behalf of the Institute, our most sincere thanks. From them, our premium committee, under the direction of Mr. Robert Lovett as chairman, at the last Fair received 91 written reports, comprising the various departments of agriculture, commerce, manufactures, and the arts. Consequent upon these reports, the number of premiums awarded, amounted to 991, and are estimated to cost $3,100, consisting of the following:

Gold medals,	43
Silver cups,	58
Silver medals,	263
Diplomas,	485
Cash,	$110
Vols. Transactions New-York State Agricultural Society,	32
Transactions American Institute,	21
Bridgeman's Gardeners' Assistant,	10
American Agriculturist,	6
New-York Farmer and Mechanic,	6
Gardener's Farmers' Dictionary,	5
Cultivator,	3
Farmers' Library and Monthly Journal of Agriculture, in vols.,	5
Colman's European Agriculture,	2
Washington's Letters on Agriculture,	4
Downing's Fruits and Fruit Trees of America,	5
Kenrick's American Orchardist,	5

Vols.	Prince, on Fruit,	3
	Farmers' Library,	3
	Monthly Journal of Agriculture,	2
	Prince, on the Vine,	1
	Bridgeman's Fruit Cultivators' Manual,	4
	Downing's Landscape Gardening,	3
	Hovey's Magazine of Horticulture,	3
	Loudon's Ladies' Flower Garden,	2
	American Flower Garden Directory,	2
	Bridgeman's Florists' Guide,	3
	Buist's Rose Manual,	2
	Total vols.,	137

The horticultural and floral department, under the care of Mr. Thomas Bridgeman, of New-York, and Mr. Samuel Walker, of Boston, was uncommonly full, consisting of choice specimens from 218 exhibitions, and so arranged by the gentlemen named, as to elicit universal admiration.

The cattle show, held on the 5th Avenue, corner of 23d street, rivalled all the preceding exhibitions, presenting some of the finest specimens of stock in the country. The most important feature of this show, was an admitted concentration of the best bloods.

The ploughing and spading matches were held on the 9th of October at Flushing, on grounds furnished by the Messrs. Parsons. We are indebted to Capt. Elisha Peck for increased facilities afforded the citizens in reaching this place, by augmenting the number of steamers and reducing the fare. The concourse attending was very large. The citizens of Flushing affording every possible facility. We regret that the condition of the ground was unfavorable, having suffered severely from drought; still the exhibition was highly gratifying to the immense numbers who were in attendance. The spading was a severe test, owing to the dryness of the soil; nevertheless seven entered for competition, proceeded in their task amid the thunder of cannon from an artillery corps which honored the festival; the broad ensign of our Union beautifully waving to the breeze from various parts of the field, which, together with martial bands discoursing sweet and patriotic music, rendered the scene truly unique and interesting. No accident occurred to mar the pleasure of the day

It affords us much satisfaction to say, that from the commencement of the operations of the Institute to the present day, the officers of the Navy and Army of our country, have been its steadfast friends, and contributed largely to the measure of its usefulness. We annually experience their kindness at our Fairs.

The following condensed statement of the receipts and expenditures as reported by the Finance Committee, the vouchers of which, together with their report are herewith presented, and are a part of this report.

Receipts.

To cash received from sales of tickets at Castle Garden,		$13,581 50
" received at the Cattle Show,		174 00
" for rents of confectionary and perfumery stands,		236 50
" sales of lumber used at the Fair and at the Cattle Show,		346 00
		$14,338 00
Less counterfeit money, &c.,		26 00
		$14,312 00

Payments.

By Printing and Publication Com.

Printing circulars, invitations, tickets, blanks, handbills, badges, &c.,	$416 30	
" Addresses,	115 72	
" Proceedings of conventions of farmers, gardeners, and silk culturists,	108 97	
" list of premiums,	68 90	
Newspaper advertisements,	254 46	
Flags for stages, bill posting, and contingent expenses,	156 00	
		$1,223 99
Carried forward,		$

Brought forward,------		$
By Committee of Arrangements.		
Lumber, carpenters' work and ironmongery, at Castle Garden,----------	$757 19	
Plumbing and lead pipe for steam boiler,-	61 98	
Steam power and fuel,----------	384 12	
Painting, glazing show cases and transparencies, ----------	58 92	
Lighting,----------	286 28	
Clerk hire, police, day and night watch, assistants and laborers, ----------	894 75	
Lumber and carpenters' work at the Cattle Show, ----------	401 26	
Ticket sellers, door keepers and laborers at Cattle Show, ----------	37 50	
Horticultural department expenses, including printing horticultural report, -----	271 68	
Petty expenses, including a new Dynamometer for testing plows, and Taylor's nautical experiments,----------	125 35	
		$3,279 03
By Finance Committee.		
Ticket sellers and door keepers,----------		$212 50
By committee on room and music for Anniversary Address.		
Rent of Tabernacle,----------	$80 00	
Music for do ----------	25 00	
Use of platform,----------	9 00	
		114 00
By committee on Refreshments.		
Refreshments for managers while detailed on duty, and guests from a distance,---	$374 00	
Refreshments for bands, &c., from Navy Yard and Governors Island, whose services were gratuitous,----------	97 98	
		471 98
Carried forward,------		$

Brought forward,----------		$
Miscellaneous Bills.		
Rent of Castle Garden, 17 days at $75 per day,----		$1,275 00
Room for convention of farmers, gardeners, and silk culturists, ----------		20 00
Fireworks,----------		210 00
Violincello presented to the blind band, ----------		30 00
Cloth for orators,----------		52 50
Boat and carriage hire for hands, ----------		16 00
By Premium Committee.		
Gold and silver for medals,----------	$1339 26	
Silver cups, &c.,----------	586 36	
Engraving medals, cups, &c., in part,----	200 00	
Cash premiums (in part,) ----------	50 00	
New diploma on steel plate and printing,-	583 00	
Recutting seal,----------	5 00	
Books for premiums, ----------	147 32	
Filling up diplomas in part,----------	41 20	
		2,955 14
Total expenses 19th Fair,----		$9,860 14
Recapitulation.		
Receipts,----------		$14,312 00
Expenditures, ----------		9,860 14
Balance, ----------		$4,451 86

ADONIRAM CHANDLER,

Chairman of the Board of Managers.

LIST OF PREMIUMS

Awarded by the Managers of the Nineteenth Annual Fair of the American Institute, Oc ober, 1846.

AGRICULTURAL AND HORTICULTURAL DEPARTMENT.

Stallions.

Robert L. Stevens, New- York, for the best thorough bred stallion. (Tornado.) Silver cup.

Absalom D. Nelson, Greenburgh, N. Y., for the second best thorough bred stallion. (Belzona.) Silver medal.

George M. Patchen, Brooklyn, L. I., for the best stallion for all farming purposes. Silver cup.

Smith Freeman, Rahway, N. J., for the second best stallion for all farming purposes. Silver medal.

Henry D. A. Ward, Middletown, Conn., for one stallion. (Henry Eclipse.) Diploma.

James Sanders, 1 Chatham Square, for one stallion. (Young Alexander.) Diploma.

John Wyse, Middletown, N. J., for one stallion (Sir Henry.) Diploma.

Mares.

Wm. Jones, Oyster Bay, L. I., for the best thorough bred brood mare. Silver cup.

John H. Coster, New-York, for the second best thorough bred brood mare. Silver medal.

Joseph Blakeslee, Watertown, Conn., for the best brood mare for all farming purposes. Silver cup.

Samuel Hart, Brooklyn, L. I., for the second best brood mare for all farming purposes. Silver medal.

Colts.

Jesse Hobley, Williamsburgh, L. I., for the best two year old colt. (Harry of the West.) Silver cup.

Bernardus Hendrickson, Hempstead, L. I., for the best one year old colt. (Young Diamond.) Silver cup.

William Jones, Oyster Bay, L. I., for a colt under one year old. Diploma.

Farm Horses.

Charles Bathgate, Morrisania, Westchester Co., N. Y., for the best pair of farm horses. Silver cup.

Thomas Bell, Morrisania, Westchester Co., N. Y., for the second best pair of farm horses. Silver cup.

Matched Horses.

Willard S. Reed, New-York, for the best pair of matched horses Silver cup.

J. Fisher Sheafe, New Hamburgh, Westchester Co., N. Y., for a pair of matched horses. Silver Medal.

Mules and Jacks.

David S. Mills, Newtown, L. I., for the best pair of working mules. Silver cup.

Charles F. Miller, New-York, for the best jack. Silver cup.

Cattle, (improved stock.)

Thos. Bell, Westchester Co., N. Y., for the best Durham bull over two years old. Silver cup.

Roswell L. Colt. Paterson, N. J., for the best Devon bull two years old and over. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Ayrshire bull two years old and over. Silver cup.

Thos. Bell, Westchester Co., N. Y., for the best Durham bull calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Ayrshire bull calf. Silver medal.

John A. Pool, New-Brunswick, N. J., for the best Durham cow. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Devon cow. Silver cup.

Thomas Ellison, New Windsor, N. Y., for the best Ayrshire cow. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Alderney cow. Silver cup.

Thomas Addis Emmet, New-York, for the best Durham heifer over one year old. Silver cup.

J. N. Blakeslee, Watertown, Conn., for the best Devon heifer over one year old. Silver cup.

George Vail, Troy, N. Y., for the best Durham heifer calf. Silver medal.

William Whitney, Morristown, N. J., for the best bull over one year old. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Devon bull over one year old. Silver cup.

Lewis G. Morris, Fordham, Westchester Co., N. Y., for the best grade bull over two years old. Silver cup.

James Bathgate, Fordham, Westchester Co., N. Y., for the best grade bull over one year old. Silver cup.

James Weeden, Newtown L. I., for the best grade bull calf. Silver medal.

Charles Bathgate, Westchester Co., N. Y., for the best grade cow. Silver cup.

Lewis G. Morris, Fordham, Westchester Co., N. Y., for the best grade heifer over one year old. Silver cup.

James Bathgate, Fordham, Westchester Co., N. Y., for the best grade heifer calf. Silver medal.

Native Stock.

Whitson Jarvis, Brooklyn, L. I., for the best native cow. Silver cup.

Le Grand Bradley, Hamden, Conn., for the second best native cow. Silver medal.

Josiah Purdy, Jr., Rye, Westchester Co., N. Y., for the best native heifer. Silver medal.

Fat Cattle.

Selah Strong, Milford, Conn., for the best pair of fat oxen. Silver cup.

Joseph S. French, for a fat steer. Silver medal.

Working Cattle.

Curtis Bacon, Middletown, Conn., for the best yoke of working cattle. Silver cup.

John B. Davis, Derby, Conn., for the second best yoke of working cattle. Silver medal.

William J. Townsend, Astoria, L. I., for a yoke of working cattle. Diploma.

Benjamin Florence, Mamaroneck, N. Y., for a yoke of working cattle. Diploma.

Curtis Bacon, Middletown, Conn.; John B. Davis, Derby, Conn.; Lewis A. Thrall, Watertown, Conn.; J. N. Blakeslee, Watertown, Conn.; David S. Mills, Newtown, L. I.; for the best five teams of working cattle. Each $10.

W. J. Townsend, Astoria, L. I., for the best five yoke of working oxen. $20.

Thomas Bell, Morrisania, Westchester Co., N. Y., for the second best five yoke working cattle. $10.

Sheep.

J. N. Blakeslee, Watertown, Conn., for a Merino buck. Silver cup.

J. N. Blakeslee, Watertown, Conn., for the three best Merino ewes. Silver cup.

Hiram Whitlock, Watertown, Conn., for a Saxon Merino buck. Silver cup.

Hiram Whitlock, Watertown, Conn., for Saxon and Merino ewes. Silver cup.

Charles Bathgate, Morrisania, Westchester, Co., N. Y., for the best Leicester buck. Silver cup.

Benjamin Florence, Mamaroneck, N. Y., for the three best Leicester ewes. Silver cup.

Thomas Bell, Morrisania, Westchester Co., N. Y., for the three best Leicester lambs. Silver cup.

Robert Bolton, Jr., Eastchester, N. Y., for the best Southdown buck. Silver cup.

Robert Bolton, Jr., Eastchester, N. Y., for the best Southdown lambs. Silver cup.

John Brewster, English Neighbourhood, N. J., for a Leicester buck lamb. Diploma.

Thomas Bell, Morrisania, N. Y., for two Leicester ewes. Diploma.

Charles Blackbourne, Prospect Hill, L. I., for superior Lincolnshire sheep. Silver cup.

Edward Hallock, Milton, Ulster Co., N. Y., for a fat wether. Silver cup.

Swine.

Ryder and Montross, Sing Sing, N. Y., for the best boar. Silver cup.

John Winn, Thirteenth-street, for the second best boar. Diploma.

Samuel Love, fifty-third-street, for the best sow. Silver cup.

David Johnson, Flatbush, L. I., for the second best sow. Diploma.

John Love, Fifty-third-street, for the best shote. Silver medal.

Ryder and Montross, Sing Sing, N. Y., for the best lot of pigs. Siver cup.

Poultry, &c.

Samuel Swan, Bedford, L. I., for four superior white Bremen geese. Trans. N. Y. State Ag. Soc.

Henry A. Field, New-York, for two pair of Dutchess geese, very fine specimens. Trans. N. Y. State Ag. Soc.

Henry A. Field, New-York, for two pair Dorking fowls. Trans. N. Y. State Ag. Soc.

William Wood, New-York, for six pair top knot ducks. Trans. N. Y. State Ag. Soc.

S. F. Jones, Cedars, New Brighton, for a pair of Capon turkies, and one pair Capon cocks. Trans. N. Y. State Ag. Soc.

Aaron Clement, Philadelphia, Pa., for two pairs Jersey Blue chickens. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for eleven top knot Poland fowls. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for three Muscovy ducks, two white turkies, and Poland fowls. Trans. N. Y. State Ag. Soc.

Henry A. Field, New-York, for a Scotch shepherd dog. Trans. N. Y. State Ag. Soc.

Farms.

Samuel B. Townsend, Newtown, L. I., for good farming, with great economy. Silver cup.

David S. Mills, Newtown, L. I., for farming, as regards fencing, buildings, crops and dairy for milk. Silver cup.

Thomas Bell, Morrisania, N. Y., for good farming, and with improved stock thereon. Silver cup.

Gouverneur Morris, Morrisania, N. Y., for good farming, and especially so as a dairy farm for milk. Silver cup.

Jeremiah Johnson, East Brooklyn, L. I., for a Pattern farm, as a market garden, and perhaps unequalled in the country. Gold medal.

Farm of the corporation of the city of New-York, Blackwell's Island; worthy of notice, as improved under guidance of Moses G. Leonard. Gold medal.

W. J. Townsend, Astoria, L. I., for his farm, worthy of a secondary premium, having commenced judiciously. Silver cup.

Henry Smith, Astoria, L. I., for a pattern garden for a gentleman near the city, combining, upon a few acres, comfort and plenty, in all the luxuries of horticulture, with economy. Silver medal.

David Johnson, Flatbush, L. I. The report of the committee states, that this field of corn was of great luxuriance, and entitled to the highest premium, as the average yield would equal eighty bushels per acre. Silver cup.

Agricultural Productions.

D. S. Mills, Newtown, L. I., the best and greatest variety of Indian corn. Silver medal.

Peter Wyckoff, Bushwick, L. I., for the best forty ears of white corn. Colman's European Agriculture.

Charles Hubbard, Middletown, Conn., for the best forty ears of yellow twelve rowed corn. Washington's Letters on Agriculture.

W. J. Townsend, Astoria, L. I., for seventy-five ears of fine early Canada corn. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for superior sheep tooth corn. Trans. N. Y. State Ag. Soc.

J. H. Coggeshall, Lynn, Mass., for forty ears extra early yellow corn. Trans. N. Y. State Ag. Soc.

O'Rourke, New-Jersey, for superior specimens of Barbadoes corn. Trans. Am. Ins.

Thomas Ash, Throg's Neck, N. Y., for forty ears long white Indian corn. Trans. N. Y. State Ag. Soc.

S. T. Jones, New Brighton, Staten Island, for forty ears of long white corn. Trans. N. Y. State Ag. Soc.

A. Haring, Harrington, N. J., for the best bushel of white flint wheat. Silver cup.

James Weeden, Newtown, L. I., for the second best specimen of wheat (Mediterranean.) Washington's Letters on Agriculture.

Henry A. Field, New-York, for the best bushel of rye. Silver medal.

Robert L. Pell, Pelham, Ulster Co., N. Y., for the second best bushel of rye. Washington's Letters on Agriculture.

Robert L. Pell, Pelham, Ulster, Co., N. Y., for the best bushel of oats, (Ulster.) Silver medal.

S. T. Jones, New Brighton, Staten Island, for the second best bushel of oats. Washington's Letters on Agriculture.

Robert L. Pell, Pelham, Ulster Co., N. Y., for the best bushel of barley. Silver medal.

Robert L. Pell, Pelham, Ulster Co., N. Y., for the best bushel of buckwheat. Colman's European Agriculture.

W. J. Townsend, Astoria, L. I., for the best specimen of Egyptian corn. Gardner's Farmers' Dictionary.

E. H. Kimball, Flatlands, L. I., for a bushel of superior Bergen wheat. Trans. N. Y. State Ag. Soc.

John F. Pond, Worcester, Mass., for the best assortment of quinces. Bridgeman's Gard. Ass't.

Richard T. Underhill, Croton Point, N. Y., for a dozen excellent quinces. Kenrick's Am. Orchardist.

O. Smith, Munroe, Orange co., N. Y., for fifteen fine quinces. Kenrick's Am. Orchardist.

Isaac Pullen, Highstown, N. J., for twelve varieties of apples, and three of peaches. Bridgeman's Gard. Ass't.

S. T. Jones, Staten Island, J. Kennedy, gardener, for peaches, quinces, apples and strawberries. Trans. Am. Ins.

Michaél Roe, Newark, N. J., for three fine varieties of apples. Bridgeman's Fruit Cultivators' Manual.

William E, Schultz, 278 Washington street, for a barrel of golden pippin apples. Trans. Am. Ins.

Isaac O. Underhill, N. J., for twelve fine apple quinces. Bridgeman's Fruit Cultivators' Manual.

James Ewbank, Flushing, L. I., for a grape vine containing seventy bunches. Trans. Am. Ins.

E. Classen, 219 Rivington-street, for fifteen nectarines, and three fine varieties of grapes. Brigeman's Fruit Cultivators' Manual.

A. R. Leggat, 28 West Washington Place, for a stand of fine Isabella grapes. Trans. Am. Ins.

Charles More, Ninety-eighth-street, for three varieties of apples, four of peaches, and a dish of medlars. Bridgeman's Fruit Cultivators' Manual.

D. Fairbanks, 237 Fourteenth-street, for a dish of seedling peaches. Trans. Am. Ins.

A. Coe, Newark, N. J., for a dish of Isabella grapes, and a basket of clingstone seedling peaches. Trans. Am. Ins.

Flowers.

William Kent, Prospect Hill, Brooklyn, for the best twenty-four blooms of seedling dahlias. Silver Medal.

Dunlap & Thompson, 635 Broadway, for the best twenty-four varieties of dahlias. Silver medal.

William Kent, Prospect Hill, Brooklyn, for twenty-four varieties of excellent dahlias. Farmers' Lib. & Jour. of Agriculture.

Thomas Dunn, Bloomingdale, New-York, for twenty-four blooms of seedling dahlias. Trans. N. Y. State Ag. Soc. and Am. Ins.

J. M. Thorburn & Co., 15 John-street, for twenty-four varieties of choice dahlias. Trans. N. Y. State Ag. Soc. and Am. Ins.

Charles More, Ninety-eight-street, for a splendid display of fragrant roses. Silver medal.

Mantel & Lenoir, Bloomingdale, New-York, for 600 blooms of excellent roses. Farmers' Lib. & Jour. of Agriculture.

Isaac Buchanan, Seventeenth-street, for several choice varieties of roses. Farmers' Library.

Boll & Hauser, Fiftieth-street, for an assortment of roses, embracing thirty seedlings. Farmers' Lib. & Jour. of Agriculture.

J. M. Thorburn & Co., 15 John-street, for a fine display of about four hundred and fifty dahlias, frequently renewed. Silver cup.

Dunlap & Thompson, 635 Broadway, for a display of about three hundred dahlias, frequently renewed. Silver medal.

William Kent, Prospect Hill, Brooklyn, for superb display of about two hundred and fifty dahlias. Silver medal.

Thomas Hogg & Son, Seventy-first-street, for a fine display of dahlias. Farmers' Library.

Boll & Hauser, Fiftieth-street, for several varieties of choice dahlias. Jour. of Agriculture.

John Briell, Harsimus, N. J., for a good display of dahlias. Downing's Landscape Gardening.

William Phelan & Sons, corner of Fifth-street and Avenue A, for a fine assortment of dahlias. Hovey's Magazine of Horticulture.

William Reid, Murray Hill, New-York, for several displays of excellent dahlias. Mrs. Loudon's Ladies' Flower Garden.

William Davison, Brooklyn, L. I., for some fine varieties of dahlias, frequently renewed. American Flower Garden Directory.

Charles More, Ninety-eighth-street, for a fine display of dahlias and roses. Downing's Landscape Gardening.

Marc & Co., Forty-fourth-street, for several varieties of choice dahlias and roses. American Flower Garden Directory.

E. H. Kimball, Flatlands, L. I., for two ornamental designs, containing several varieties of choice flowers. Silver medal.

Dunlap & Thompson, 635 Broadway, for two ornamental designs of dahlias, roses, and other flowers. Downing's Landscape Gardening.

Boll & Hauser, Fiftieth-street, for a beautiful ornamental design. Hovey's Magazine of Horticulture.

Mantel & Lenoir, Forty-sixth-street, two beautiful bouquets of rare flowers. Hovey's Magazine of Horticulture.

Charles More, Ninety-eight-street, for three bouquets of choice roses. Mrs. Loudon's Ladies' Flower Garden.

Isaac Buchanan, Seventeenth-street, for several varieties of choice roses and dahlias. Trans. N. Y. State Ag. Soc.

Samuel M. Cox, Forty-ninth-street, for an ornamental design of choice flowers. Trans. Am. Ins.

John W. Wood, Bloomingdale, New-York, for two pyramids of flowers. Trans. Am. Ins.

L. Prevost, Astoria, L. I., for a display of dahlias, frequently renewed. Trans. N. Y. State Ag. Soc.

Miss Sarah A. Ogden, Newark, N. J., for a beautiful display of choice flowers. Bridgman's Florists' Guide.

E. H. Kimball, Flatlands, L. I., for a fine display of dahlias and other flowers. Buist's Rose Manual.

John C. Beekman, S. Ruth, gardener, Sixty-first street, for several varieties of flowers, at different times. Trans. Am. Ins.

James Robinson, Brooklyn, L. I., for a fancy basket of ornamental flowers. Bridgeman's Florist's Guide.

J. C. Greene, Staten Island, N. Y., D. Marony, gardener, for a display of some of the choicest kinds of cock's combs. Trans. Am. Ins.

Dunlap & Thompson, 635 Broadway, for a lot of beautiful cock's combs. Buist's Rose Manual.

James Fairbanks, West Fourteenth-street, for several fine cock's combs. Bridgeman's Florists' Guide.

Mrs. A. Jackson, Williamsburgh, L. I., for two bouquets and a stand of dahlias. Trans. Am. Ins.

Mrs. S. Burris, Williamsburgh, L. I., for two bouquets, and a design made of dahlias. Bridgeman's Florists' Guide.

Vegetables.

Robert L. Pell, Pelham, Ulster co , N. Y., Maurice Cunningham, gardener, for the choicest assortment of culinary vegetables. Silver medal.

John C. Beekman, S. Ruth, gardener, Sixty-first-street, for the best and greatest variety of vegetable roots for cattle. Silver medal.

E. H. Kimball, Flatlands, L. I., for the best twelve blood beets. Bridgeman's Gard. Assistant.

E. H. Kimball, Flatlands, L. I., for the best twelve turnip rooted beets. Am. Agriculturist.

Deaf and Dumb Asylum, Garret Mead, gardener, for twelve mangel wurtzel beets. N. Y. Far. & Mec.

John C. Beekman, S. Ruth, gardener, Sixty-first-street, for the best six heads of cape broccoli. Trans. N. Y. State Ag. Soc.

E. H. Kimball, Flatlands, L. I., for the best twelve heads of drumhead cabbage. Gardner's Farmers' Dictionary.

E. H. Kimball, Flatlands, L. I., for the best twelve heads of Savoy cabbage. Bridgeman's Gard. Asst.

E. H. Kimball, Flatlands, L. I., for the best twelve carrots for the table. Am. Agriculturist.

Robert L. Pell, of Pelham, Ulster co., N. Y., M. Cunningham, gardener, for the best twelve carrots for cattle. N. Y. Far. & Mec.

Joseph Clowes, Harsimus, N. J., for the best twelve roots of white solid celery. Trans. N. Y. State Ag. Soc.

Robert L. Pell, Pelham, Ulster co., N. Y., for the best twelve roots of red celery. Trans. N. Y. State Ag. Soc.

Deaf and Dumb Asylum, Garret Mead, gardener, for the best six egg plants. Bridgeman's Gard. Ass't.

E. H. Kimball, Flatlands, L. I., for the best peck of white onions. Gardner's Farmers' Dictionary.

E. H. Kimball, Flatlands, L. I., for the best peck of yellow onions. Am. Agriculturist.

John C. Beekman, S. Ruth, gardener, Sixty-first-street, for the best peck of red onions. N. Y. Far. & Mec.

John C. Beekman, Sixty-first-street, for the best twelve parsnips for the table. Bridgeman's Gard. Ass't.

Roswell L. Colt, Paterson, N. J., for the best twelve parsnips for cattle. Vol. of the Cultivator.

Roswell L. Colt, Paterson, N. J., for three good varieties of potatoes—a peck of each. Farmers' Library.

Charles Hubbard, Middletown, Conn., for a peck of superior potatoes for the table. Journal of Agriculture.

E. H. Townsend, Newtown, L. I., for two pecks of fine cattle po tatoes, in variety. Gardner's Farmers' Dictionary.

P. Wyckoff, Bushwick, L. I., for three fine cheese pumpkins. N. Y. Far. and Mec.

Robert L. Pell, Pelham, Ulster co., N. Y., M. Cunningham, gardener, for three large cattle pumpkins. Am. Agriculturist.

James L. Moore, Newburgh, N. Y., for an extra large pumpkin, weight 135 pounds. Bridgeman's Gard. Ass't.

Roswell L. Colt, Paterson, N. J., for twelve fine roots of salsify. Trans. Am. Ins.

John C. Beekman, S. Ruth, gardener, Sixty-first-street, for three fine crook-necked squashes. Am. Agriculturist.

Robert L. Pell, Pelham, Ulster co., N. Y., for the best and largest squash. N. Y. Far. & Mec.

W. J. Townsend, Astoria, L. I., for two fine varieties of tomatoes. Vol. of the Cultivator.

E. H. Kimball, Flatlands, L. I., for the best peck of white turnips. Am. Agriculturist.

Robert L. Pell, Pelham, Ulster co., N. Y., for the best peck of yellow turnips. N. Y. Far. & Mec.

Roswell L. Colt, Paterson, N. J., for the best peck of Russia turnips. Vol. of the Cultivator.

W. B. Oddie, Sneeding's Landing, Rockland co., N. Y., for a peck of fine early potatoes. Trans. N. Y. State Ag. Soc.

A. M. Baker, Elizabethtown, N. J., for peck of good mercer potatoes. Trans. N. Y. State Ag. Soc.

David Johnson, Flatbush, L. I., for three good varieties of potatoes. Trans. N. Y. State Ag. Soc.

James B. Colyer, Bushwick, L. I., for three fine crook necked pumpkins. Trans. Am. Ins.

John C. Beekman, Sixty-first-street, for eight varieties of rare vegetables. Trans. N. Y. State Ag. Soc.

William Phelan & Sons, corner Fifth-street and Avenue A., for thirty-six fine white egg plants. Trans. Am. Ins.

Colored Orphan Asylum, for six varieties of culinary vegetables. Trans. N. Y. State Ag. Soc.

M. S. Brown, Astoria, L. I., for twelve fine Savoy cabbages, and a peck of white onions. Trans. Am. Ins.

Agricultural Implements.

I. T. Grant & Co., Scaghticoke, Rensselaer Co., N. Y., for the best fanning machine, (a new improvement.) Silver medal.

John Bean, Elizabethtown, N. J., for the second best fanning machine. Diploma.

H. St. John, Albany, N. Y., for the best straw cutter. Silver medal.

J. C. Langdon, Troy, N. Y., for the second best straw cutter. Diploma.

Jones & Smith, New-York, A. B. Allen, agent, 187 Water-street, for an improved field planting machine. Silver medal.

Joseph Stevens, Saratoga Co., N. Y., for a model of improved fence, with brick posts. Gold medal.

James Sedgwick, Poughkeepsie, N. Y., A. B. Allen, agent, 187 Water-street, for the best fruit gatherer. Diploma.

James A. Cutting, Boston, Mass., for a hive of working bees, (having some good arrangements.) Silver medal.

Edward Townley, 124 Canal-street, for bee hives. Diploma. (Silver medal having been before awarded.)

Leonard Proctor, Montgomery co., N. Y., for a churning machine. Diploma.

John Wilkinson, Dutchess co., N. Y., for a model of a harrow. Diploma.

David B. Rogers, Seneca Falls, David B. Lum, agent, Seneca Falls, for steel cultivators' teeth. Diploma.

Myers & Bryan, Scaghticoke, N. Y., for a grain cradle. Diploma.

John Moore, 183 Front-street, for a double corn-sheller. Diploma.

A. B. Allen, 187 Water-street, for a root plow. Silver medal.

B. Langdon, A. B. Allen, agent, 187 Water-street, for a cultivator plow. Diploma.

Ruggles, Nourse & Mason, A. B. Allen, agent, 187 Water-street, for a field corn planter, (Bachelder's.) Diploma.

A. B. Allen, 187 Water-street, for the largest exhibition of agricultural implements. Silver medal.

Plows.

John Moore, 183 Front-street, for the best plow, combining the greatest number of necessary requisites. Silver cup.

David Brontes, 86 Nassau-street, for the second best plow, combining the greatest number of necessary requisites. Silver medal.

Plowing.

Asa Munn, Orange Co., N. J., for the best plowing. Silver cup.

Philip Arent, Flushing, L. I., for the second best plowing. Silver medal.

John Brewster, English Neighborhood, N. J., for the third best plowing. Diploma.

Spading.

Thomas Farrel, Flushing, L. I., for the best spading. Silver cup.

William Hubbs, Flushing, L. I., for the second best spading. Silver medal.

Joseph Morrel, Gowanus, King's co., N. Y., for the third best spading. Diploma.

Raw Silk.

J. S. Pierce, Burlington, Vt., for the best samples of white and yellow raw silk. Gold medal.

A. C. Van Epps, 19 Stanton-street, for the best 20 lbs. of raw silk. Gold medal, $20, and the Van Schaick Medal.

John M. Summy, Manheim, Lancaster co., Pa., for a sample of 130 lbs., raw silk. Silver medal.

A. C. Van Epps, 19 Stanton-street, for the best bushel of peanut cocoons. Gold medal, $10, and the Van Schaick medal.

D. Eberly, Manheim, Lancaster co., Pa., for the second best sample of cocoons. Silver medal.

Miss Jane Hagerty, 122 Twelfth-street, for specimens of silk reeling. Silver medal.

Miss Margaret L. L. Hutchings, 55 University Place, for specimens of silk reeling. Silver medal.

Miss S. Westgate, 261 Bowery, for specimens of silk reeling. Silver medal.

MANUFACTURING AND MECHANICAL DEPARTMENT.

Baths.

L. Stebbins, Hartford, Conn., for the best bath, because of its adaptation to numerous domestic purposes, economy of room for Douche stream. Silver medal.

Jordan L. Mott, Water-street, for the second best bath (cast-iron), because of its cheapness and durability. Diploma.

B. Blagge, 54 Maiden-lane, for a cast-iron bathing tub, for its convenience and durability. Diploma.

Smith, Torrey & Co., 53 Maiden-lane, for a vapor and shower bath. Diploma.

Charles Kane, 377 Bowery, for a portable shower bath and bathing tub connected. Diploma.

Lewis Jennings, 499 Pearl-street, for a patent diluvian shower bath. Diploma.

Bells.

Andrew Meneely, West Troy, N. Y., for the best church bell, for sonorousness and purity of tone. Silver medal.

H. N. Hooper & Co., Boston, Mass., for the best and largest specimen of casting of church bells. Silver medal.

Andrew Meneely, West Troy, N. Y., for an improvement in hanging church bells. Diploma.

Gentlemen's Boots and Shoes.

Lorin Brooks, 138 Fulton-street, for the best cork sole boots. Silver medal.

John Dick & Co., 109 Nassau-street, for the best double sole boots with patent shanks. Silver medal.

Kimball & Beasley, 194 Broadway, for the best dress boots. Silver medal.

Canfield & Smith, Orange, N. J., for the second best dress boots. Diploma.

Kimball & Beasley, 194 Broadway, for the best fancy patent leather boots. Diploma.

Ladies' Boots and Shoes.

George Nicholls, journeyman to J. O. Whitehouse, Brooklyn, L. I., for the best cloth cork sole button boots. Silver medal.

P. Laboyteaux, 641 Broadway, for the second best cloth cork sole button boots. Diploma.

P. Laboyteaux, 641 Broadway, for cork sole riding boots. Diploma.

P. Laboyteaux, 641 Broadway, for the best satin pump gaiter boots. Silver medal.

Benjamin Shaw, 71 Canal-street, for the best fair-stitched satin gaiter boots. Silver medal.

J. O. Whitehouse, 152 Fulton-street, Brooklyn, for the second best satin pump gaiter boots, and second best fair-stitched satin gaiter boots. Diploma.

J. O. Whitehouse, 152 Fulton-street, Brooklyn, for best satin slipper. Silver medal.

Books, Binding and Stationery.

R. C. Root & Co., 152 Pearl-street, for the best bound blank book. Silver Medal.

Rich & Loutrel, 61 William-street, for the best ruled blank book. Silver medal.

John C. Koch, 115 Nassau-street, for the best specimen of binding. Silver medal.

Harper and Brothers, 82 Cliff-street, for the second best specimen of binding. Diploma.

New-York Bible and Common Prayer Book Society, Thomas C. Butler, agent, 20 John-street, for a prayer book for the blind. Silver medal.

Joseph Hyde, 115 Nassau-street, for a bible for the blind. Diploma.

George Mather, 276 Front-street, for the best specimen of printers' ink. Silver medal.

Frame, Pearson & Conger, Bloomfield, N. J., for assorted colored medium paper. Diploma.

J. Rayford, Bloomfield, N. J., for double cap wrapping paper. Diploma.

Longbotham & Co., 8 Liberty-street, for the best binders' boards. Silver medal.

Rich & Loutrel, 61 William-street, for the best manifold writers. Diploma.

Jesse K. Park, for very superior architectural tracing paper. Silver medal.

G. D. Baldwin, 35 Spruce-street, for designing paper. Diploma.

Richard Smyth, 325 Front-street, for beautiful specimens of parchment and vellum. Diploma.

Franklin Mann, 82 Cliff-street, for marble paper. Diploma.

Henry Morrow, 56 Chatham-street, for the best wood cut printing. Diploma.

William B. Weiss, 56 Chatham-street, for the second best wood cut printing. Diploma.

C. Wells, Bronson & Co., 56 Gold-street, for specimens of label printing. Diploma.

Pudney & Russell, 21 Liberty-street, for specimens of altar tablets. Diploma.

George F. Nesbitt, corner Wall and Water-street, for machine cut wood type. (Silver Medal having been before awarded.) Diploma.

George A. Arrowsmith, 70 Nassau-street, for an improved inkstand. Diploma.

J. R. Bigelow & Co., 9 Spruce-street, for specimens of stationery articles—sand boxes and wafer stamps. Diploma.

William Chauncy Langdon, New Orleans, for an historical game. Silver medal.

Josiah Adams, Nassau-street, for the "New World," a game. Diploma.

Brushes.

William Steele, 305 Pearl-street, for superior feather brushes. Silver medal.

J. T. Barnes, 255 Pearl-street, for superior brush mats. Silver medal.

Cabinet Ware.

James E. Hoyt, 130 Eighth-street, for the best workmanship on a carpenter's chest. Diploma.

Downs & Silva, 119 Walker-street, for the second best specimen of workmanship on a frame. Diploma.

John Needham, 192 West Nineteenth-street, for the best sofa bedstead. Silver medal.

Noney & Nodine, 116 Warren-street, for the second best sofa bedstead. Diploma.

William C. Gardiner, 69 Gold-street, for the best principle of a bedstead. Silver medal.

C. De Bow, 47 Beekman-street, for the second best principle of a bedstead, (extension bureau bedstead.) Diploma.

Mallaby & Holmes, 50 Broadway, for a patent folding hinge bedstead, for its ingenuity and utility. Silver medal.

Samuel S. Parker, 156 and 158 Greenwich-street, Martin Willard, 150 Chatham-street, and John S. Morris, 71 Gold-street, for a screw bedstead. Diploma.

J. Robinson, 28 Pell-street, for a reading stand. Diploma.

T. Brooks, Brooklyn, L. I., for a rosewood chair and centre table. Diploma.

David Coles, 48 Broadway, for the carving on a cottage and office chair. Diploma.

J. W. Mason, 317 Pearl-street, for a Boston rocking chair. Diploma.

L. Ingersoll, 71 Bowery, for an office chair. Diploma.

Harrison Miller, 104 Third Avenue, for an inlaid work box. Diploma.

Robert Atwill, 38 Fourteenth-street, for a work box. Diploma.

Thomas Thornhill, 346 Broome-street, for a fancy work box. Diploma.

Edward Robinson, Thirteenth-street, for a work box. Diploma.

C. De Bow, 47 Beekman-street, for an extension table. Silver medal.

William Rollinson, 23 Catharine-street, for a tool chest. Diploma.

Rushton & Co., 110 Broadway, for a medicine chest. Diploma.

John Boyse, 194 Fulton-street, for a portable writing desk. Diploma.

J. G. Isham, 7 Fulton-street, for the best specimen of sand paper. Diploma.

J. P. Gage, Thirty-second-street, C. Tousley, agent, 251 Bleecker-street, for the second best specimen of sand paper. Diploma.

Joiners' Work.

Ketcham & Howard, Brooklyn, for two pine doors, of excellent workmanship. Silver medal.

Carpeting and Oil Cloth.

Edward Lynes, West Farms, N. Y., John Lynes, agent, 450 Pearl-street, for the best specimen of hearth rugs. Silver medal.

Hotchkiss & Smith, Sing Sing, N. Y., Geo. Hastings & Co., agents, 5 South William-street, for the second best specimens of hearth rugs. Diploma.

James W. Woodruff, Elizabethtown, N. J., Lord, Warren, Salter & Co., agents, 41 Broad-street, for the best specimen of oil cloth, and oil cloth carriage top. Silver medal.

The New-Jersey Oil Cloth Factory, L. W. & T. A. Miller, agents, 48 Canal-street, for the best specimen of oil cloth. Silver medal.

Bailey & Co., Portland, Maine, L. H. Adams, agent, Elizabethtown, N. J., for the best specimen of table oil cloth. Silver medal.

R. Crowther, West Farms, Westchester co., N. Y., for the best specimen of Brussels carpeting. Silver medal.

Lowell Manufacturing Co., Lowell, Mass., Beals, Bush & Co., agents, 32 Broad-street, for the best specimens of three ply carpeting. Silver medal.

Carriages, Sleighs, Axles, &c..

James Goold & Co., Albany, N. Y., Isaac Mix, jr., 440 Broadway, for the best sleigh. Silver medal.

Waterbury & Harvey, Poughkeepsie, N. Y., for the second best sleigh. Diploma.

Eaton, Gilbert & Co., Troy, N. Y., for an omnibus. Gold medal.

G. Vanderwerken, Newark, N. J., for a landau. Silver medal.

Doty & Nostrand, Flushing, L. I., for a superior lumber wagon. Silver medal.

Martin G. Silber, corner Broadway and Twenty-first-street, for a butcher's cart. Diploma.

John Lessing, Newark, N. J., for a child's wagon. Diploma.

Gulick Hose Company, No. 11, for the best hose carriage. Silver medal.

Putnam Hose Company, No. 31, for the second best hose carriage. Diploma.

Hawkins & Atwater, Birmingham, Conn., for axles and springs. Silver medal.

George Dunn, Newark, N. J., for a buggy railing, and dash frames. (Silver medal having been before awarded.) Diploma.

Carving.

P. Cartereau, 334 Greenwich-street, for the best specimen of carving. Silver medal.

P. F. Sedalle, 216 Boadway, for a frame, an excellent specimen of machine moulding and fancy sawing. Diploma.

Thomas Braidwood, 17 Post's Buildings, for designs of calico prints. Diploma.

William N. Johnson, 204 Bowery, for portrait frames. Diploma.

Isaac Bennett, 68 Vandam-street, for a parlor ornament. Diploma.

Castings.

Jordan L. Mott, 264 Water-street, for garden furniture, (cast iron vases and chairs). Silver medal.

John B. Clute, 229 Pearl-street, for a cast iron urn. Silver medal.

C. F. Hoag, Schenectady, N. Y., for the best specimen of hollow ware. Silver medal.

N. Batchelor, 101 Reade-street, for fancy cast iron tables, highly ornamented. Gold medal.

Clocks and Watches.

John S. Greig, Walden, Orange co., N. Y., for an improved clock, to sit itself plumb. Silver medal.

George H. Clarke, agent, 46 Courtlandt-street, for ship clocks. Diploma.

Philip B. Segee, 30 Franklin-street, for a traveling timepiece. Diploma.

Year Clock Company, 35 Courtlandt-street, for one year clocks. (Silver medals having been before awarded.) Diploma.

D. Eggert & Son, 239 Pearl-street, for the workmanship on chronometers. Silver medal.

Henry Glover, 5 Wall-street, for the workmanship on chronometers. Silver medal.

Trinity Church Clock.

James Rodgers, 410½ Broadway, for the clock in Trinity church. The arrangement of the whole, as regards manufacture and finish, does great credit to the skill and ingenuity of the maker. Gold medal.

Clothing, &c.

Johnson, Lanphier & Hascy, 203 Broadway, for the best gentlemen's clothing. Diploma.

J. B. Houstein, 288 Grand-street, for the second best gentlemen's clothing. Diploma.

Edward J. Olssen, 74 Bowery, for the best boys' clothing. Diploma.

S. W. Scofield, 38 Bowery, for the second best boys' clothing. Diploma.

Benedict & Burnham, Waterbury, Conn., for the best metal buttons. Silver medal.

Coach Lamps.

Roberts, Eagles & Co., Newark, N. J., for superior coach lamps. Diploma.

Confectionary.

Nathan Raynor, 372 Grand-street, for the best plum cakes. Diploma.

John J. Haley, 698 Broadway, for the second best plum cake. Diploma.

M. B. & O. F. Wentworth, 103 Greenwich-street, for the best icing on plum cakes. Diploma.

James Tompson, 40 Lispenard-street, for a superior specimen of icing on plum cakes. Diploma.

William Ragg, Syracuse, N. Y., for a specimen of icing. Diploma.

H. Tateosyan, 267 Division-street, for a fine sample of fig paste. Diploma.

Henrion & Cheveau, Philadelphia, Penn., for a superior specimen of jujube paste. Diploma.

J. E. Ebling, 200 Bowery, for very superior confectionary. Diploma.

Cooperage.

James F. Shay, 87 Pine-street, for a wood bound barrel. Diploma.

Charles H. Wiley, 21 Old Slip, for an oval harness cask. Diploma.

Cotton Goods.

James' steam mills, Newburyport, Mass., H. A. Smyth, agent, 43

Pine-street, for the best specimens of bleached and brown cotton shirtings. Gold medal.

New-York Mills, Oneida county, N. Y., Charles Carville, agent, 26 Broad-street, for the second best cotton shirtings. Silver medal.

Ida Mills, Troy, N. Y., Charles Carville, agent, 26 Broad-street, for handsome specimens of striped shirtings. Diploma.

Claremont Factory, N. H., Blashfield & Smith, agents, 38 Pine-street, for wide bleached cotton sheetings. Diploma.

Phenix Co., Providence, R. I., Shepherd & Howe, agents, 38 Exchange Place, for the second best wide cotton sheetings. Diploma.

New-York Mills, Oneida county, N. Y., Charles Carville, agent, 26 Broad-street, for beautiful specimens of drilled jeans, Gold medal.

A. & W. Sprague, Providence, R. I., Hoyt & Tillinghast, agents, 49 Pine-street, for chintz prints. Diploma.

J. Dunnell & Co., Pawtucket, R. I., Fearing & Hall, agents, 55 Exchange Place, for the best cotton prints, exhibiting great skill and beauty in design, color and execution. Gold medal.

American Print Works, Fall River, Mass., for the second best specimens of prints. Silver medal.

Bristol Printing Co., Mass., Bowen & McNamee, agents, 16 William-street, for superior mouslin de laine, beautifully designed, richly colored, and finely executed. Silver medal.

J. L. Pierce, Utica, N. Y., for a good specimen of bedtick. Diploma.

New-York Mills, Oneida co., N. Y., Fisher, Howe & Hamilton, agents, 21 Broad-street, for Roubeyx cassimeres. Silver medal.

Shepherd & Son, Taunton, Mass., Holbrook, Nelson & Co., agents, 37 Pine-street, for Canton flannels. Diploma.

Alfred Hyatt, Newark, N. J., for buckram. Diploma.

J. Johnson, 115 East Broadway, for the best specimen of fine cotton yarn. Silver medal.

Curtright Manufacturing Company, Greenboro', Ga., Lord, Warren, Salter & Co., agents, Broad-street, for the best specimens of coarse cotton yarn. Silver medal.

Portsmouth Steam Factory, Portsmouth, N. H., for superior cotton yarn, spun by machinery. Silver medal.

Hamilton Co., Lowell, Mass., Nesmith & Co., agents, 50 Pine-street, for superior specimens of cotton blanketing. Diploma.

James Wragg, English Neighborhood, N. J., Crocker & Warren, agents, 18 Beaver-street, for superior press and hair cloth. Silver medal.

Daguerreotypes.

M. B. Brady, 207 Broadway, for the best specimens of daguerreotypes. Silver medal.

M. A. Root, Philadelphia, Penn., for the second best specimens of daguerreotypes. Silver medal.

T. P. & D. C. Collins, Philadelphia, Penn., for a superior landscape daguerreotype. "Fairmount Water Works." Silver medal.

Philip Haas, 289 Broadway, for daguerreotypes. Diploma.

M. Laurence, 152 Broadway, for daguerreotypes. Diploma.

J. Gurney, 189 Broadway, for daguerreotypes. Diploma.

George Cook, 58 Chatham-street, for daguerreotypes. Diploma.

John Plumb, 251 Broadway, for daguerreotypes. Diploma.

A. J. Beals, 156 Broadway, for daguerreotypes. Diploma.

A. Litch, Boston, Mass., for daguerreotypes. Diploma.

Dies.

Alonzo Hibbard, 38 White-street, for the best chasing tools. Silver medal.

Anthony Morin, 38 White-street, for the second best chasing tools. Diploma.

William Tompson, 169 William-street, for bookbinders' ornamental tools and impressions. Silver medal.

Drugs and Chemicals.

Charles Partridge, 3 Courtlandt-street, for the best specimen of segar matches. Diploma.

L. Solomon, 132 Hammersley-street, for the second best specimen of segar matches. Diploma.

Charles Partridge, 3 Courtlandt-street, for the best specimen of loco foco matches. Silver medal.

Theodore Hyatt, 4 Eighth-street, for the second best specimen of loco foco matches. Diploma.

William Partridge & Son, 27 Cliff-street, for the best specimen of chemical preparations. Silver medal.

Truslow & Jackson, 297 Front-street, for the second best specimens of chemical preparations. Diploma.

John Corell, Rivington-street, for the best specimen of chocolate and prepared cocoa. Diploma.

Henrion & Cheveau, Philadelphia, Penn., for the second best specimen of chocolate and prepared cocoa. Diploma.

Williams & Bros, Manchester, Conn., for the best specimen of paste blacking. Diploma.

John Vandeventer, 87 Barclay-street, for specimens of paste blacking. Diploma.

Mooney & Parmenter, 76 Division-street, for specimens of paste blacking. Diploma.

Kemp & Knight, Boston, Mass., for the best liquid blacking. Diploma.

Miller Hallowes, St. Marys, Geo., for a very superior quality of Georgia arrowroot. Silver medal.

Miller Hallowes, St. Marys, Geo., for the best starch. Diploma.

H. C. Hudson, Newark, N. J., for the best specimen of mustard. Diploma.

Charles L. Stickney, corner Rivington and Attorney-streets, for the second best specimen of mustard. Diploma.

T. P. Merriam, Providence, R. I., William Steel & Co., sole agents, 305 Pearl-street, for the best specimen of bar soap. Silver medal.

Samuel G. Cornell, 175 Front-street, for the best specimen of linseed oil. Silver medal.

J. Howard & Son, 73 South-street, for the best specimen of lard oil (manufactured by E. G. Alden.) Silver medal.

J. L. Van Doren, corner West and Charles-streets, J. W Smith, agent, 90 Wall-street, for the second best specimen of lard oil. Diploma.

William Thomson & Co., 56 Cherry-street, for the best specimen of saleratus. Diploma.

B. F. Moses, corner Broadway and Chambers-street, for mouth cashous. Diploma.

Jeffries & Catterfield, 146 Troy-street, for refined brimstone of superior quality. Silver medal.

James S. Brady, 39 Greene-street, for carbonate of soda. Diploma.

George Kennedy, 112 Broadway, for the best specimen of hair dye. Diploma.

E. Phalon, 61 Broadway, for the second best specimen of hair dye. Diploma.

Morse & Winslow, Thirteenth-street, for the best specimen of candles. Silver medal.

H. L. Kendall & Co., Providence, R. I., for the second best specimen of candles. Diploma.

Tilden & Co., New Lebanon, N. Y., for the best specimens of medicinal herbs. Diploma.

Kent & Black, for the best red and black inks. Silver medal.

J. E. Hover, Philadelphia, Penn., Geo. F. Nesbitt, agent, Wall-street, for the second best specimen of black inks. Diploma.

Charles H. Meyer, Forty-first-street, for the best specimen of refined camphor. Diploma.

C. Pavey, 35 Gold-street, for the best harness blacking and leather preservative. Silver medal.

J. L. Pierce, Utica, N. Y., for the second best polishing powder. Diploma.

Smith & Co., 43 Vesey-street, for the best bottled soda water, with syrups. Silver medal.

Dearborn & Co., Third Avenue, for the second best specimen of soda water, with syrups. Diploma.

Julius Pollock, 54 Avenue C, for a beautiful sample of white shellac varnish. Diploma.

Thomas B Shepard, Providence, R. I., for superior quality of oil of vitriol. Diploma.

Joseph Dixon, Jersey City, N. J., for a black lead pot. Diploma.

J. W. Kelley, 171½ William-street, for lemon sugar. Diploma.

Jas. S. Scofield, 168 Division-street, for samples of refined liquorice. Diploma.

Edge Tools and Cutlery.

Mockridge & Francis, Newark, N. J., for the best carpenters' planes. Silver medal.

J. W. Farr, 366 Grand-street, for a carpenters' plow. Diploma.

E. W. N. Starr & Co., Middletown, Conn., for the best plane irons. Silver medal.

Anthony Vittaly, Newark, N. J., for shoemakers' tools. Silver medal.

John C. Nixon, 91 Nassau-street, for the best engravers' tools. Diploma.

Hunt, Woodward & Connor, 215 Pearl-street, for curriers' tools. Diploma.

Samuel C. Hill, agent, 12 Platt-street, for edge tools. Diploma.

T. James Wood, 62 Chatham-street, for an exhibition of tools. Diploma.

Henry Rowntree, 60 Chatham-street, for an exhibition of tools. Diploma.

Joseph Goldie, 133 Attorney-street, for superior anvils and vice. Gold medal.

A. & G. W. Brady, 39 Green-street, for vices. Diploma.

Holley & Merwin, Lakeville, Conn., for the best pen and pocket cutlery. Gold medal.

Waterville Manufacturing Co., Waterbury, Conn., for fine pocket cutlery. Silver medal.

John Wild, 160 Division-street, (15 years of age,) for fine pocket cutlery. Silver medal.

Isaac Jaques, Elizabethtown, N. J., for improved tailors' shears. Gold medal.

John C. Nixon & Son, 91 Nassau-street, for tailors' and other shears. Silver medal.

Leonard & Wendt, 29 and 31 Gold-street, for tailors' shears. Diploma.

R. Heinisch & Burnet, Newark, N. J., for tailors' shears. Diploma.

J. D. Chevalier, 184 Broadway, for dentists' instruments. (Silver medal awarded last year.) Diploma.

R. B. Dunn, North Wayne, Maine, for the best scythes. Silver medal.

J. H. Morse & Sons, Sheldon Falls, Mass., for the second best scythes. Diploma.

Lawson & Co, Shelburn Falls, Mass., for scythe snaths. Diploma.

P. Dickinson, Amherst, Mass., Wm. C. Perrine agent, 67 Courtlandt-street, for a cast-steel hammer. Silver medal.

Hiram C. Gerow, 139 Broome-street, for a machinist's hammer. Diploma.

J. W. Dominick, 6 Catharine-street, for hammers. Diploma.

Gilbert & Barnett, Newark, N. J., for cast butts. Silver medal.

Seth Whalen, West Milton, Conn., A. B. Allen, 187 Water-street, agent, for the best hoes. Silver medal.

E. & T. Fairbanks & Co., St. Johnbury, Vt., Fairbanks & Co., agents, 124 Water-street, for the second best hoes. Diploma.

William Wheeler & Co., Troy, N. Y., C. B. Conant, Ellis & Co., agents, 217 Pearl-street, for curry combs. Silver medal.

New-York Screw Co., corner 33d street and 3d Avenue, for the best wood screws. Gold medal.

New-England Screw Co., Providence, R. I., for the second best wood screws. Silver medal.

Thomas Furman, 228 Houston-street, for hand-rail screws. Diploma.

A. B. Taylor, 3 Hague-street, for machinists' wrenches. Diploma.

J. N. & L. Churchill, Hamden, Conn., for the best cast-steel augers. Silver medal.

Sanford, Newton & Co., Meriden, Conn., for excellent ship augers. Silver medal.

J. P. Anson, 20 Platt-street, for a spoke auger. Diploma.

Long & Davenport, 10 Platt-street, for cast steel blued augers. Diploma.

Graves & Gurler, Chesterfield, N. H., for cast steel augers and bitts. Diploma.

Alexander Barclay, 208 Pearl-street, for bitts and stirrups. Diplomas.

Pettibone & Curtis, 6 Gold-street, for butcher knives. Diploma.

George Harvey, 79 Forsyth-street, for braces and bitts. Silver medal.

W. Blivin, agent, 9 Platt-street, for coach wrenches. Diploma.

Orlando D. McClain, 149 Spring-street, for turning saws. Diploma.

Blake & Brothers, 6 Gold-street, for the best castors, pullies and wardrobe hooks. Diploma.

J. Johnson & Brothers, Paterson, N. J., for table and bed castors. Diploma.

Lewis Beach, Worcester, Mass., for steel squares and rules. Diploma.

Seymour, Brothers & Co., Westmoreland, Oneida Co., N. Y., Folger, Alford & Co., agents, 219 Pearl-street, for blind butts, fastenings and butt hinges. Diploma.

Henry Place, 228 Houston-street, for blind fastenings. Diploma.

John D. Locke, 193 Water-street, for rivets. Diploma.

Smith, Torrey & Co., 50 Maiden Lane, for foot scrapers. Diploma.

D. Houston, 7 Burton-street, for a coopers' croze. Diploma.

Solomon Whipple, Albany, N. Y., for machine cut files. Diploma.

Davenport, Quincy & Co., agents, 81 John-street, for stocks and dies. Diploma.

Rozell Freeman, Utica, N. Y., for patent mop irons. Diploma.

J. B. Haight, Jersey City, N. J., for umbrella, shovel and tongs stands. Diploma.

George H. Swords, 116 Broadway, for composition wire, for grape vines. Diploma.

William Shove, Newark, N. J., for patent lever buckles. Diploma.

Henry Nelson, 240 Third Avenue, for superior horseshoes, picks and hammers. Diploma.

John Flynn, corner Third Avenue and Seventh-street, for horse-shoes. Diploma.

J. V. D. Wyckoff, 149 Broadway, for fancy hardware. Diploma.

H. Hewer, Philadelphia, Penn, Clark & Wilson, agents, 5 Platt-street, for saddlers' tools. Diploma.

Engravings.

Wm. Roberts, 71 Nassau-street, for the best specimen of wood engraving. Silver medal.

B. F. Pease, 42 Nassau-street, for the second best specimen of wood engraving. Diploma.

R. Ten Eyck, 136 Nassau-street, for specimens of wood engraving. Diploma.

M. Houseworth, 39 Lafarge Buildings, for specimens of wood engraving. Diploma.

Edward P. Vollum, 368 Broadway, for specimens of wood engraving. Diploma.

G. & W. Endicott, 59 Beekman-street, for the best specimens of lithography. One of the partners being a manager of the fair, they are debarred from receiving a premium.

L. Nagel, 74 Fulton-street, for the best specimen of lithography, in colors. Silver medal.

E. Jones & G. W. Newman, 128 Fulton-street, for specimens of chrono-lithography. Diploma.

W. Wade, 102 Broadway, J. Disturnell, publisher, 102 Broadway, for the panorama of the Hudson river. Silver medal.

Sherman & Smith, 122 Broadway, for the best map engraving, (map of Canada and the Lower Provinces.) Silver medal.

D. G. Johnson, 140 Nassau-street, for the second best map engraving, (map of the World.) Diploma.

T. & E. H. Ensign, 36 Ann-street, for a map of the United States. Diploma.

J. H. & G. W. Colton, 86 Cedar-street, for a map of the vicinity of New-York. Diploma.

J. H. Colton, 86 Cedar-street, for a lithographic map of Palestine. Diploma.

Rev. O. B. Bidwell, 120 Nassau-street, for three missionary maps. Diploma.

Robert Lovett, 5 Dey-street, for the best specimen of seal engraving. Being a manager, he is debarred from receiving a premium.

A. W. Francis, 38 Reade-street, for the second best specimen of seal engraving. Diploma.

E. B. Whaite, 1 Courtlandt-street, for a specimen of card engraving. Diploma.

North & Gallagher, Jersey City, N. J., for engraved copper-rollers for calico printing. Silver medal.

E. T. Brundage, 207 Third Avenue, for a pentagraphic apparatus. Diploma.

George Gray, 32 Washington-square, for plaster and sulphur medallions. Diploma.

Fine Arts.

F. R. Spencer, 115 Canal-street, for the best portrait painting in oil. Silver medal.

Miller & Hillyer, 16 Rivington-street, for the second best portrait painting in oil. Diploma.

Joseph J. Button, 206 Ninth-street, for the best landscape painting. Silver medal.

Miss Isabella Shaw, Williamsburgh, L. I., for the second best landscape painting. Diploma.

George W. Griffith, Westchester co., N. Y., for a good specimen of oil painting. Diploma.

Mesdames Palmer & Bond, 230 East Broadway, for specimens of water-colored painting. Diploma.

James Stothard, jr., 12 Madison-street, for the second best water colored painting. Diploma.

J. R. Waterstein, 171 Canal-street, for the best pencil drawings. Diploma.

Miss Cornelia T. Meeker, Bushwick, L. I., for the second best pencil drawing. Diploma.

Henry Egbert, jr., 4 Hammersley-street, for a good crayon drawing. Diploma.

John V. Cornell, 209 Centre-street, for a good painting of the "Iron Witch." Diploma.

J. & H. L. Tryon, 36 Suffolk-street, for specimens of cameos, exceedingly well designed. Diploma.

W. J. Hannington, 418½ Broadway, for good specimens of window shades. Diploma.

T. Brockleback, 556 Broadway, for a specimen of restored painting. Diploma.

Miss Emma A. Heeley, Albany, N. Y., for flower painting in water colors, from nature. Diploma.

H. W. Herbert, New-York, for superior pen and ink sketches. Diploma.

Fire Arms.

Moses Dickson, Louisville, Ky., for the best rifle. Silver medal.

Allen & Thurber, Norwich, Conn., for the best revolving pistols. Silver medal.

Blunt & Syms, 44 Chatham-street, for second best revolving pistols. Diploma.

Clinton Roosevelt, 23 Chambers-street, for a projectile, evincing ingenuity in the invention. Diploma.

Robert McCarty, 1 State-street, for a cannon ball of a new construction. Diploma.

Fire Works.

Isaac Edge, Jersey City, N. J., for the best exhibition of fire-works. Silver cup.

John Turrell, Fort Washington, N. Y., for the second best exhibition of fire-works. Silver medal.

Glass and Earthen ware.

P. C. Dummer & Co., Jersey City, N. J., for cut glass. Silver medal.

Smith & Day, 38 Peck Slip, for superior earthen spittoons. Diploma.

Window Glass.

M. Lane & Co., Clinton Co., N. Y., Morgan, Walker & Smith, agents, 82 John-street, for a superior quality of Redford crown window glass. Diploma.

Fur and Silk Hats.

John N. Genin, 214 Broadway, for the best silk hat. Silver medal.

J. B. Finchley, 189 Broadway, for the second best silk hat. Diploma.

Henry T. Gratacap, 392 Broadway, for the best military hat. Diploma.

Burdicks, Oar & Co., Herkimer, N. Y., for Saxony wool hat-bodies. Silver medal.

John N. Genin, 214 Broadway, for the best caps. Silver medal.

J. B. Finchley, 189 Broadway, for the second best caps. Diploma.

Straw and Pamela Bonnets.

W. Gay, Franklin, Mass., for the best fine split-straw bonnet. Silver medal.

Roland D. Solace, 189 Pearl-street, for the second best fine split-straw bonnet. Diploma.

Thomas Young, 96 Bowery, for a good, fine split-straw bonnet. Diploma.

Thomas Young, 96 Bowery, for a pearl-straw bonnet. Diploma.

A. A. Gridley, Watertown, Conn., for very superior palm-leaf hats. Diploma.

Robert Love, corner Twenty-fifth-street and Eighth Avenue, for Neapolitan lace for bonnets. Silver medal.

John Sammis, 86 Delancy-street, for the best pamela bonnets. (Made from sea island cotton.) Silver medal.

James Milwood, 62 John-street, for the second best pamela bonnets. (Made from sea island cotton.) Diploma.

Hemp and its Manufactures.

Spencer Anderson, Kentucky, McGregor & Morris, agents, 11 Front-street, for the best specimen of hemp. Silver medal.

Geo. F. Power, Brooklyn, L I., E. H. Carmick & Co., agents, No. 7 Beaver-street, for the second best specimen of hemp. Diploma.

L. T. Beardsley, Watertown, N. Y., for superior twine and shoe thread. Gold medal.

New-Bedford Cordage Manufactory, (H. Evans, superintendent,) for a superior coil of manilla rope. Diploma.

Household Utensils.

Martin D. Meyers, 259½ Bleecker-street, for a refrigerator of excellent workmanship. Diploma.

William Wagner, 36 Cherry-street, for the best brass-bound pail. Diploma.

Windle & Co., 56 Maiden Lane, for the best brooms. Diploma.

George A. Arrowsmith, 70 Nassau-street, for a knife sharpener, with bell attached. Diploma.

James A. Kissam, 188 Water-street, for a bath heater—a good and useful article. Diploma.

Charles C. Bier, 238 Water-street, for a water cooler. Diploma.

India Rubber Goods.

The Newark India Rubber Manufacturing Company, 53 Maiden Lane, for the best specimen of shirred suspenders. Silver medal.

Horace H. Day, 23 Courtlandt-street, for the second best specimen of shirred suspenders. Diploma.

Brower & Brooks, 100 Broadway, for piano covers—a beautiful article. Diploma.

N. Hayward & Co., Lisbon, Conn , for the best India rubber shoes. Silver medal.

M. J. Frisbee, 217 Pearl-street, for the second best India rubber shoes. Diploma.

Horace H. Day, 23 Courtlandt-street, for the best air pillow covered with ticking and hospital cushion. Diploma.

Horace H. Day, 23 Courtlandt-street, for a mattrass—very meritorious. Diploma.

M. Dodd & Son, Newark, N. J., for superior made suspenders. Diploma.

Iron and Steel.

Peter Cooper, 17 Burling Slip, for specimens of railroad iron. Gold medal.

Peck & Son, 27 Cliff-street, for specimens of sheet iron. (Gold medal having been before awarded.) Diploma.

Broadmeadow Steel Company, Richmond, Va., for specimens of steel. Silver medal.

Leather.

Jacobus & Utter, Newark, N. J., for the best black and russet, bridle, skirting, bag and trunk leather. Silver medal.

J. Hollingsworth, Newark, N. J., for the second best skirting leather and skirts. Diploma.

Calvin Sage, Colebrook, Conn., Seymour & Co., agents, 97 John-street, for the best shaved sheep skins. Silver medal.

V. W. Helms, New-York, for the second best shaved sheep skins. Diploma.

Halsey & Tucker, Newark, N. J., for the best finished calf skins. Silver medal.

A. H. Brahe, 27 Ferry-street, for the second best calf skins. Diploma.

J. &. R. Ward, Newark, N. J., for the best Japanned leather. (Variety and quality, as a whole, superior to any thing the judges ever witnessed.) Gold medal.

John Chadwick, 34 Front-street, Newark, N. J., for patent leather, oiled silk, glazed silk and glazed muslin. Diploma.

David B. Crockett & Co., Newark, N. J., for patent skirting leather, military belt leather, collar hides, enamelled hides and patent shoe hides. Diploma.

G. W. Gorum, 173 Water-street, for the best japanned hat skivers. Diploma.

Burbank & Chambers, 23 Ferry-street, for the best fancy colored and bronze morocco boot skins. Silver medal.

Luman Foot, North Canaan, Conn., for the best bark tanned sheep skins. Silver medal.

L. Shepard & Son, Norfolk, Conn., for the best bark tanned roans. Diploma.

D. N. Edson, Olive, Ulster Co., N. Y., for the best sole leather butts. Diploma.

T. Cromwell, 7 Ferry-street, for the second best sole leather. Diploma.

John Colwell, Newark, N. J., for skirting and bridle leather. Diploma.

Locks, Door Springs, &c.

William E. Woodbridge, 61 Elizabeth-street, for the best bank lock. Silver medal.

Joshua H. Butterworth, Dover, N. J., for a bank lock. Diploma.

Henry Isham, Hartford, Conn., for a bank lock. Diploma.

John L. Whetstone, Cincinnati, Ohio, for a bank lock. Diploma.

Pierpont, Mallory & Co., New-Haven, Conn., L. B. Bleecker, agent, 219 Pearl-street, for the best locks and latches. Silver medal.

H. Wheeler, 222 Pearl-street, for the second best latches. Diploma

Tuttle & Day, Newark, N. J., for the best night latch. Diploma.

Charles G. Martin, 175 Laurens-street, for the second best night latch. Diploma.

George W. Jackson, 142 Fulton-street, Brooklyn, L. I., for silver plated door knobs and plates. Silver medal.

Clinchard & Sommers, Newark, N. J., for trunk and door locks. Silver medal.

Price & Dana, Utica, N. Y., for rim and mortice locks and bell-pulls. Diploma.

William H. Day, 132 Mercer-street, for specimens of knobs. Diploma.

J. C. Palmer, Conn, E. Hunt, agent, 20 Platt-street, for a set of blind butts and frame. Diploma.

Machinery, Steam Engines, Models, &c.

Earle & Eames, Worcester, Mass., for the best card setting machine. Gold medal.

T. K. Earle, & Co., Worcester, Mass., for the second best card setting machine. Silver medal.

T. K. Earle & Co., and Earle & Eames, Worcester, Mass., for machine cards, no difference being perceptible to the judges. Diploma to each.

James T. Perkins, Hudson, N. Y., for the best large slide lathe. Diploma.

Hughes & Phillips, Newark, N. J., for the best small lathe. Diploma.

Stillman, Allen & Co., Novelty Works, New-York, for the best steam engine, (ten horse power.) One of the partners being a manager of the fair, they were debarred from receiving a premium.

B. F. McCreary, 79 Columbia-street, for the second best steam engine. Silver medal.

Geo. W. Weeks, 240 Delancy-street, for the third best steam engine. Diploma.

Charles F. Frasse, 95 Fulton-street, for a beautiful model of a steam engine. Diploma.

F. J. Austin, 31 Ann-street, for the best embossing machine. Silver medal.

B. Sheridan, 29 Ann-street, for the second best embossing machine. Diploma.

Flagler, Baker & Co., 213 Water-street, for the best portable forge. Silver medal.

J. H. Gilbert & Son, Peekskill, N. Y., for the second best portable forge. Diploma.

F. M. Ray, corner, Thirty-third-street, and Third Avenue, for the best railroad truck. (Gold medal having been before awarded.) Diploma.

Cornelius Kanouse, Jersey City, N. J., for the second best railroad truck. Diploma.

Wm. Kumbel, 33 Ferry-street, for excellent specimens of machine stretched leather bands, upon original machinery, by Mr. Kumbel. Silver medal.

F. W. Wood, 67 Frankfort-street, for the best mode of splicing machine stretched leather bands. Silver medal.

Jabez Baldwin, Louisville, Kentucky, for the best lifting or hand force pump. Silver medal.

D. L. Farnam, 29 Fulton-street, for the second best hand force pump. Diploma.

G. B. Maigne, 183 William-street, for the best card printing press. Silver medal.

Peter S. Hoe, 29 Gold-street, for the second best card printing press. Diploma.

John Fraser, 1 Chatham Square, for the best door pad. Diploma.

Gifford & Gennet, Syracuse, N. Y., for the second best weather strip or pad. Diploma.

J. A. Fay, Keene, N. H., David Jacobus, agent, 138 Wooster-street, for the best foot morticing machine. Silver medal.

B. H. Otis, Syracuse, N. Y., John Green, agent, 115 Walker-street, for the second best foot morticing machine. Diploma.

Jonathan V. Nichols, Newark, N. J., for the best hand morticing machine. Silver medal.

J. Van Houghton, T. J. Wood, agent, corner Duane and Chatham-street, for the second best hand morticing machine. Diploma.

W. H. Jennison, 66 Frankfort-street, for the best Croton filter, (filter made of sand, compressed.) Gold medal.

S. H. Lewis, 34 Eldridge-street, for a filter, with a valve to reverse the current. (A good improvement.) Silver medal.

Thomas F. Wenman, corner Broadway and Franklin-street, for a filter, for the improvement for reversing current. Diploma.

William Read & Co., 63 and 65 Centre-street, for a filter—the filter of sandstone. Diploma.

F. M. Ray, corner Thirty-third-street and Third Avenue, for an improved railroad wheel. Silver medal.

Charles Ross, 120 Eighth-street, for a portable flour mill. (Silver medal having been before awarded.) Diploma.

Charles Ross, 120 Eighth-street, for a hand flour and corn mill. (A good article for the west.) Silver medal.

Charles Ross, 120 Eighth-street, for a portable corn mill. Diploma.

James P. Ross, Lewisburgh, Union Co., Pa., for a machine for breaking and grinding corn in the ear. Silver medal.

Daniel Howell, 29 Hammond-street, for a tanning machine. (Silver medal having been before awarded.) Diploma.

A. H. Beschormann, 69½ Centre-street, for a tanning machine. Diploma.

L. McGuire, 298 Mulberry-street, for a foot sawing machine. Diploma.

H. L. B. Lewis, 87 Walker-street, for a model of safety locomotive. Silver medal.

George Farnham, 305 Greenwich-street, for a snow plow for railroads. Diploma.

D. Griffin, 192 Broadway, for a plan of setting steam boilers for detaining the heated gases. Silver medal.

George Vail & Co., Speedwell, N. J., for a good specimen of paper engine plates. Silver medal.

J. A. Roebling, Pittsburgh, Pa , J. P. Pirsson, Jr., agent, 5 Wall-street, for a coil of wire rope for suspension bridges. Gold medal.

Geo. C. Taft, Worcester, Mass , Rich & Loutrel, agents, 61 William-street, for five beatifully finished copying presses. Diploma.

John Brown, 29 Ann-street, for a dovetailing machine. Silver medal.

J. L. Haines, 77 Sixteenth-street, for a tenoning machine, Diploma.

Pearley Martin, A. H. Mallory, agent, 9 Pine-street, for tin harness for weaving. Diploma.

B. S. Benson, Baltimore, Md., for water rams—a good article for farmers. Silver medal.

Chauncy Andrews, Paterson, N. J., for an elevating water wheel. (Silver medal having been before awarded.) Diploma.

Thomas G. Kells, N. Y., for the second best water wheel. Diploma.

G. Hotchkiss, Windsor, Broome, Co , N. Y., for a saw mill water Wheel. (Gold medal having been before awarded.) Diploma.

William Bullock, Williamsburgh, L. I., for an improved water wheel. Silver medal.

Daniel R. Curtis, New-Hartford, Oneida Co., N. Y., for a mule drum for cotton spinning. Diploma.

Moses Drake, St. Johnsville, N. Y., for a model of a flour cooler, to prevent flour from spoiling. Silver medal.

Barnum & Anthony, 276 Stanton-street, for an improvement for preventing deposites and detaching incrustations upon the inner surfaces of steam boilers. Silver medal.

George R. Moore, Philadelphia, Pa., for a machine for double seaming tin work. Diploma.

Seth Lamb, 57 Reade-street, for a street cleaning machine—a simple labor saving machine. Diploma.

Perry G. Gardiner, 10 Wall-street, for an ingenious paddle wheel. Diploma.

Charles Thurber, Norwich, Conn., for a writing machine for the blind. A remarkable piece of mechanism. Gold medal.

George Ewing, 41 Hammond-street, for a button covering machine. Diploma.

Thomas Godwin, corner Eleventh-street and Broadway, for a Croton shut off. Diploma.

H. R. Worthington, patentee, William H. Baker, for a steam pump and fire engine. Silver medal.

Farrand & Hinman, New-Jersey, for a water drawer. Diploma.

Loudon & Shaw, 42 Gold-street, G. Scott, agent, corner Eighth-street and Sixth Avenue, for a hat finishing machine. Diploma.

James Herron, Philadelphia, Pa., for a railroad superstructure. Gold medal.

Walter Hunt, 42 Gold-street, for a domestic mincing machine. Silver medal.

John Williams, Salem, Washington, Co., N. Y., for a small gear cutter. Silver medal.

F. J. Austin, 31 Ann-street, for a book binder's cutting machine. (Silver medal having been before awarded.) Diploma.

D. Griffin, 192 Broadway, for an improvement in steam boilers, (outside extension flues to anthracite boilers reverberating the flame.) Silver medal.

Paul Stillman, Novelty Works, for excellent vacuum and steam guages. Silver medal.

Worthington & Baker, Williamsburg, L. I., for a percussion water guage. Silver medal.

James Rodgers, 410½ Broadway, for a steam vacuum guage. Diploma.

Hall & Chase, New-Jersey, for a new style of window fastening. Diploma.

George C. Taft, Worcester, Mass., Rich and Loutrel, agents, 61 William-street, for notarial presses. Diploma.

E. S. Peters, Kent, Conn., for a model of a shingle machine. Diploma.

F. H. Bartholomew, 165 Front-street, for a patent self-acting hydrant. Silver medal.

John L. Constable, 91 Amity-street, for a model of an improved four roller sugar mill. Silver medal.

J. Darling, Adrian, Michigan, Russel Warren, 157 Madison-street, and Jacob Humphrey, 81 Pike-slip, agents, for a rotary bellows on a new principle. Silver medal.

William Vine, 754 Greenwich-street, for an improved knife cleaning machine. (Silver medal having been before awarded.) Diploma.

William Ballard, 7 Eldridge-street, for jack screws. (Silver medal having been before awarded) Diploma.

F. E. Sickles, 196 Hudson-street, for an improvement in the mode of connecting the steam chest with the cylinder and condenser of steam-engines. Silver medal.

F. J. Austin, 31 Ann-street, for an inking machine. Diploma.

James Bogardus, 40 Eldridge-street, for an eccentric mill. (Silver medal having been before awarded.) Diploma.

Hiram Humiston, Troy, N. Y., for a model of a superior cast-iron roof. Gold medal.

Mott & Ayres, Twenty-fifth-street, between Tenth and Eleventh Avenues, for a model iron roof. Diploma.

E. Jones & Co., Worcester, Mass., for a shaft coupling. Diploma.

Ephraim Lukens, Philadelphia, Penn., for a washing machine. Diploma.

J. C. Rich, 73 Pine-street, for a washing machine. Diploma.

Bacon, Bickford & Co., Simsbury, Conn., G. W. Guion, agent, 174 West-street, for a patent safety fuse for blasting. Diploma.

E. G. Tripp, A. H. Mallory, agent, 9 Pine-street, for weavers' shuttles. Diploma.

Selah Hiler & Co., 67 and 69 Forsyth-street, for a box of rivets. Diploma.

Kelsey & Garret, 85 Avenue D, for a fire hydrant. (Medal having been before awarded.) Diploma.

Calvin Emmons, 67 Forsyth-street, for a machine for preparing waste wool for re-manufacture. Silver medal.

Perry P. Gardiner, for an improved saw-mill, with elliptical stroke, now at work at No. 24 Mercer-street. Gold medal.

Daniel Barnum, 276 Stanton-street, for a double cylinder, high and low pressure steam engine. Diploma.

T. C. Clarke, Philadelphia, Penn., for an ingenious faucet. Diploma.

F. G. Richardson, 107 John-street, for wire cloth of beautiful manufacture. Silver medal.

F. Harris & Son, Brooklyn, L. I., for a smut mill upon a new construction. Diploma.

E. & T. Fairbanks & Co., St. Johnsbury, Vt., Fairbanks & Co., agents, 124 Water-street, for the best platform scales. (Silver medal having been before awarded.) Diploma.

John D. Dale, 114 Front-street, for the second best platform scales. Diploma.

Henry Westwood, Newark, N. J., for steelyards and scale beams. Diploma.

Samuel S. Potter, 188 Water-street, for a good suspension coal scale. Silver medal.

John Squire, jr., 202 West-street, for a pattern platform spring balance. Diploma.

Lardner & Davidson, 45 Leroy-street, for an apparatus for curing meat and impregnating timber with various salts. Silver medal.

William Boardman, for a steam pump for wrecking purposes. Gold medal.

John D. Ward, Jersey City, N. J., for a drilling machine. Silver medal.

Daniel Barnum, New-York, for an apparatus to prevent explosions of steam boilers and flues in steamboats. Silver medal.

Mark Poole, 23 Amity Place, for portable force pumps and garden syringes. Diploma.

Mathematical and Philosophical Instruments.

Henry Fitz, 508 Fourth-street, for an improvement in the object glass of an achromatic telescope, for which a gold medal was awarded last year. Silver medal.

Henry Fitz, 508 Fourth-street, for an improvement in a stand for a telescope. Diploma.

S. B. Smith, 297½ Broadway, for a well made magnetic machine. (Silver medal having been before awarded.) Diploma.

Thomas C. Avery, 77 Charlton-street, for a magnetic bath. Diploma.

James P. Gardner, W. A. Platt, agent, Columbus, Ohio, for a well made and ingenious sun dial. Diploma.

Robert Day & Co., 25 Ann-street, for Palmer's computing scales. (Silver medal having been before awarded.) Diploma.

William Jones, 275 Spring-street, for an improvement in the astral chronometer, for which a silver medal was awarded last year. Diploma.

James McCoskrie, Cambridgeport, Mass., Davenport, Quincy & Co., agents, 81 John-street, for a spirit level. Diploma.

H. M. Babbitt, Providence, R. I., for a micrometer—an excellent specimen of graduation, of superior workmanship. Silver medal.

Thomas Fisher, Philadelphia, Penn., for an astronomical device. Diploma.

S. S. Graham, Brooklyn, L. I., for an improvement in the construction of a camera obscura. Diploma.

E. M. Bryam, Sag Harbor, L. I., for an improvement in the suspension of the mariners' compass. Diploma.

Mechanical Drawing.

Thompson Kingsford, Bergen, N. J., for the best mechanical drawing. Diploma.

Frederic Cook, 139 Avenue D, for the second best mechanical drawing. Diploma.

Musical Instruments.

A. G. Badger, Newark, N. J., for the best Boehm flute and best eight keyed flute. Silver medal.

C. G. Christman, 404 Pearl-street, for good workmanship on a sixteen keyed flute. Diploma.

C. G. Christman, 404 Pearl-street, for a guitar. Diploma.

Jacob Kiefer, 108 Delancy-street, for the workmanship on a guitar. Diploma.

C. G. Christman, 404 Pearl-street, for a keyed bugle. Diploma.

J. D. Larrabee, Newark, N. J., for an ivory octave flute. Silver medal.

Naval Architecture.

Joseph Francis, Dry Dock, N. Y., for a metallic life boat. Gold medal.

Bishop & Sampson, East river, near Sixth-street, for a model of the steam boat Atlantic. Diploma.

William C. Redfield, N. Y., for an improvement in building freight boats. Silver medal.

Isaacs & Watkins, for self-clearing anchors. Diploma.

A. A. Wilder, Detroit, Michigan, for a steam boat telegraph. Silver medal.

Geo. W. Taylor, for marine camels for lighting vessels over bars, or off shore, when aground. Gold medal.

Needle-work, Embroidery, and Fancy Articles.

Mrs. Laura M. Briggs, 172 Division-street, for the best worsted work. Diploma.

Miss Mary Ann Magee, 276 Bleecker-street, for the second best worsted work. Diploma.

Mrs. J. Brush, 573 Broome-street, for a specimen of worsted work. Diploma.

Miss Helen M. Jacob, Rathbun's Hotel, Broadway, for a specimen of worsted work. Diploma.

Miss Maria Ripley, Brooklyn, L. I., for a frame of worsted work. Diploma.

Rev. Z. Kunze, Thirty-first-street, near Seventh Avenue, for a frame of worsted work. Diploma.

Miss Catharine Gracie, 16 Waverly Place, for an ottoman cover. Diploma.

Miss Caroline Summers, 148 Greenwich-street, for a specimen of worsted work. Diploma.

Miss Caroline K. Smith, 62 Warren-street, for a specimen of worsted work. Diploma.

Henry Lawrence, 14 John-street, for the best lamp mat. Diploma.

Lois Girard, 150 Washington-street, Brooklyn, L. I., for the second best lamp mat. Diploma.

S. L. Burnham, 17 Broadway, for the best worked fire screen. Diploma.

N. Peck, Thirty-ninth-street, for a very pretty lamp mat. Diploma.

Mrs. Charles E. West, 36 Twenty-fourth-street, for the best raised worsted work. Diploma.

Miss Josephine Marcet, 84 Orchard-street, for an embroidered ottoman cover. Diploma.

Mrs. A. Jackson, 5 Prince-street, for an embroidered handkerchief. Diploma.

Miss M. A. Cortelyou, 11 Chambers-street, for specimens of embroidery. Diploma.

Sophia McAdam, 83 Fourth-street, for an embroidered travelling bag. Diploma.

A. A. Butterfield, 33 Cedar-street, for the best embroidery on cloth. (Vest patterns.) Silver medal.

Mrs. A. Jackson, 5 Prince-street, for a needle-worked handkerchief. Diploma.

Mary Eaton, Boston, Mass, for the best cambric embroidery. Diploma.

Mrs. E. A. Hotchkin, Fairton, Conn., for a child's knit lace cap. Diploma.

Charles Larsen, 309 Grand-street, for a child's silk hood. Diploma.

Mrs. George Clark, Hyde Hall, Otsego Co., N. Y., for the best worsted embroidered chair. Silver medal.

Miss J. A. Hirley, 78 John-street, for the best chenele embroidered chair. Silver medal.

Mrs. Hannah Dixon, Jersey City, N. J., for a frame of needle-work, in imitation of line engraving. Diploma.

Miss H. Eaton, Boston, Mass., for the second best needle-work. Diploma.

J. M. Botner, 86 Nassau-street, for the best regalia. Silver medal.

M. J. Drummond, 309 Grand-street, for the second best regalia. Diploma.

Elias Combs, 131 Forsyth-street, for a case of regalia. Diploma.

Margaret Jay, 313 Bleecker-street, for the best bead bag and box. Diploma.

Mrs. Alston, 15 Roosevelt-street, for the second best bead bag. Diploma.

Mrs. M. A. Briggs, 532 Greenwich-street, for the best bead purse. Diploma.

Mrs. Willis Patten, New-England House, for the second best bead purse. Diploma.

Mesdames Palmer & Farr, 476 Broadway, for the best shirts. Silver medal.

D. W. Canfield, 2½ Maiden Lane, for a superior shirt. (Silver medal having been before awarded.) Diploma.

Joas Antonio Tello, 16 Willett-street, for feather flowers. Silver medal.

Mrs. F. Marchant, 158 William-street, for the best feather flowers. Silver medal.

M. B. D. Ackerman, 190 William-street, for the second best artificial flowers. Diploma.

Mrs. Sarah Dowdall, 67 Marion-street, for the best wax doll—made entirely by the exhibitor. Diploma.

E. Wiggins, for the best lace veil. Diploma.

Mrs. A. H. Marcy, 214 Bowery, for the best frame bonnet in cut velvet. Diploma.

Mrs. William Simmons, 564 Broadway, for the best drawn bonnets, Diploma.

John Sammis, 86 Delancy-street, for excelsior bonnets—trimming in best taste. Diploma.

Miss S. Hallack, 4 Warren-street, for the best braided merino dress. Diploma.

Mrs. E. Bradbrook, 297 Broadway, for the best exhibition of infants' clothing. Silver medal.

Miss Margaret Ann Bearns, 74 Madison-street, for the second best infants' dresses. Diploma.

Miss. Smith, 75 Thompson-street, for the best shell work. Diploma.

Isaac Labagh, 541 Broome-street, for the second best shell work. Diploma.

J. H. C. Blanc, 187 Twentieth-street, for a frame of straw work, curious and new. Diploma.

Parsells & Agate, 237 Broadway, for a case of corsets and belts, very well made. Diploma.

William J. Ross & Co., 368 Bowery, for specimens of cleaned kid gloves. Diploma.

Mrs. S. Seamen, 25 Walker-street, for a steel bead worked bag. Diploma.

Mrs. S. Weed, 10 Morton-street, for a steel bead worked bag. Diploma.

L. Duhain, 22 John-street, for specimens of dyed military and other feathers. Diploma.

Mrs. Elizabeth Gresham, Bulls Ferry, N. J., for ladies' worsted carriage shoes. Diploma.

Mrs. E. Bettger, 195 Walker-street, for the best specimen of hair work. Diploma.

Miss Abby Ann Warren, Monantam Vale, Mass., for specimens of wax fruit. Silver medal.

Miss A. M. Kortkampf, Greenwich, corner of Cedar-street, for the bset silver head ornaments. Diploma.

Miss Jane Calhoun, 16 Waverly Place, for the best table cover. Diploma.

Miss Augusta S. Rowley, Hudson, N. Y., for the second best table cover. Diploma.

Miss Sephronia Taylor, Eighth Avenue, corner Thirty-ninth-street, for a knit worsted piano cover. Silver medal.

Miss Mary Hinsdale, Pittsfield, Mass., for the best pair of knit stockings. Diploma.

Quilts.

The Misses Haviland, Harrison Co., Ky., for the best patch work quilt. Diploma.

Mrs. L. Betts, 10 State-street, for the second best patch work quilt. Diploma.

Miss Ann Elizabeth Forbes, 247 Spring-street, for the best silk quilt. Silver medal.

Mrs. V. R. Allen, 101 Third Avenue, for the second best silk quilt. Diploma.

Mrs. Margaret Stone, 425 Pearl-street, for the best knit quilt. Diploma.

Mrs. William M. Peck, Brooklyn, L. I., for the second best knit quilt. Diploma.

Mrs. Thompson, 36 Orchard-street, for the best crib quilt. Diploma.

Mrs. Matilda Tilton, 384 Washington-street, for a cradle quilt, very ingenious and neatly made. Diploma.

Mrs. Mary Hall, Hudson-street, for a quilt, a handsome specimen of quilting. Diploma.

Paper Hangings.

William S. Birch, Baltimore, Md., for the best paper hangings. Silver medal.

Christy & Constant, 61 Maiden Lane, for the second best paper hangings. Diploma.

Gold Pens.

Levi Brown, Brooklyn, L. I., for the best gold pens. Silver medal.

A. G. Spencer, Brooklyn, L. I., for the second best gold pens. Diploma.

Perfumery.

E. Rousell, 159 Broadway, for the best shaving cream, cologne water, fancy soaps and extracts. Silver medal.

Johnson, Vroom & Fowler, 3 Courtlandt-street, for the best military shaving soap. Diploma.

C. H. Ring, 192 Broadway, for the second best shaving cream. Diploma.

Joseph W. Giovannoni, 23 Nassau-street, for hair balsamic. Diploma.

Anna M. Scofield, 168 Division-street, for orris tooth paste. Diploma.

Plated Ware.

Robert Roberts, 562 Broadway, for the best silver plated door and number plates. Diploma.

Cowles Manufacturing Co., Tariffville, Conn., F. R. Anderson, agent, for superior silver plated spoons, knives and forks. Silver medal.

Piano Fortes and Organs.

Bacon & Raven, 164, Centre-street, for the best piano forte, for its rich and powerful quality of tone. Gold medal.

J. H. Schomacker & Co., Philadelphia, Pa., for the second bes tpiano fortes, but little inferior to the above, and of exquisite touch. Silver medal.

Trinity Church Organ.

Henry Erben, 166, Centre-street, for the organ in Trinity Church, for its superior tone and workmanship, being the largest and most perfect specimen of work exhibited in this country. Gold medal.

Pins and Needles.

Slocum, Jillson & Co., Poughkeepsie, N. Y., for the best pins. (Gold medal having been before awarded.) Diploma.

Howe Manufacturing Co, Edward Cook, agent, No. 17 Nassau-street, for a superior quality of pins. (Gold medal having been before awarded.) Diploma.

Knickerbocker Manufacturing Co., Brooklyn, W. C. Langley & Co., agents, 25 Broad-street, for an excellent quality of pins. Silver medal.

Henry Essex & Co., Newcastle, Westchester Co., N. Y., L. & V. Kirby, agents, 47 Cedar-street, for specimens of needles. (Gold medal having been before awarded.) Diploma.

Preparations of Natural History.

J. G. Bell, 289 Broadway, for the best stuffed birds—very fine. Silver medal.

Julian Hooper, Brooklyn, L. I., for the best prepared insects. Diploma.

A. Eagle, 24 Bowery, for fine specimens of Connecticut copper ore. Diploma.

E. H. Warner, 2 Wall-street, for a fine collection of Lake Superior silver and copper ore. Diploma.

Somerville Mining Co., N. J., for good specimens of copper ore. Diploma.

Regatta.

Boat's crew of "Monterey," for the best rowing in a 25 feet boat. (Monterey against Metamoras.) Silver medal.

Boat's crew of the "Rough and Ready," for good rowing in a thirty feet boat. (Rough and Ready.) Silver medal.

Boat's crew of the "General Taylor," for good rowing in a 30 feet boat. (General Taylor.) Diploma.

William Wood and William Hiler, for good rowing in skull boat Whitehall, time 37 minutes from Castle Garden round Bedlow's Island and back. Silver medal.

Boat's crew of the "George Washington," for the best rowing

against time, from Castle Garden round Bedlow's Island and back in 29 minutes. Silver medal.

Thomas Coady, for the best rowing with one pair of sculls, in boat "Happy go lucky," against boats "Rough and Ready," "Henry Clay," and "Fashion." Diploma.

Roads and Bridges.

Horace P. Russ, 2 Bond-street, for the "Russ pavement." Silver medal.

A. D. Bishop, Harlem, N. Y., for a railroad trellis bridge. Silver medal.

Thomas Godwin, corner Eleventh-street and Broadway, for a plan of excavating, for sewers and other purposes. Silver medal.

Nathaniel Rider, 26 Tenth-street, for an iron railroad bridge. Gold medal.

Saddlery, Harness and Trunks.

Thomas Fitzharris, Brooklyn, L. I., for the best saddlery. Silver medal.

Samuel L. Post, corner Broadway and Murray-street, for a large exhibition of harness. Diploma.

F. C. Curtis, Columbia, S. C., for a patent collar. Diploma.

J. B. & J. Bull, 206 Broadway, for a leather trunk. Silver medal.

Christian Steine, 392 Broadway, for a fireman's cap. Diploma.

Samuel Wilson, Dansville, N. Y., for a leather creasing machine. (Silver medal having been before awarded.) Diploma.

Sign Painting and Imitations.

W. Laragh, 117½ Mott-street, for the best imitation of oak. Silver medal.

J. C. Quarterman, 18 Burling Slip, for an oak sign. Diploma.

S. Alburtus, jr., 45 William-street, for a manuscript sign. Diploma.

Erasmus B. Derby, 133 York-street, Brooklyn, L. I., for a fancy sign. Diploma.

James G. Cooper, 276 Grand-street, for a transparent silk sign. Diploma.

Silver ware and Jewelry.

Wm. Adams, 38 White-street, for the best silver ware. Gold medal.

Gerardus Boyce, 110 Greene-street, for the second best silver ware. Silver medal.

Albert Coles, 6 Little Green-street, for the best silver knives and forks. Silver medal.

Samuel Baldwin, Newark, N. J., for the best watch cases and dials. Gold medal.

Squire & Brothers, 182 Bowery, for the best exhibition of jewelry. Gold medal.

A. G. Bagley, 189 Broadway, for the best silver extension pen holders. Silver medal.

Edward Deacon, 151 Spring-street, for the second best pen holders. Diploma.

Benjamin F. Moore, 43 Ann-street, for a specimen of gold chasing. Diploma.

Jonathan Smith, 89 Reade-street, for an exhibition of herald chasing. Diploma.

Manufactured Silk.

Combier & Deschau, 579 Greenwich-street, for the best silk dying. Silver medal.

William Heyden, Twenty-seventh-street, corner of Ninth Avenue, for the second best silk dying. Diploma.

Mrs. Caroline Swartz, 172 William-street, for specimens of silk dying. Diploma.

Murray & Ryle, Paterson, N. J., for the best colored sewing silk, and silk twist, and silk handkerchiefs. Gold medal.

Valentine & Sowerby, Northampton, Mass., for the second best sewing silk. Silver medal.

Haskell & Hayden, Windsor Locks, Conn., for spool silk; colors and styles very beautiful. Silver medal.

John Fox, Wheeling, Va., for manufactured silk. Silver medal.

John W. Gill, Wheeling, Va., for black satin, black striped velvet, and grey lavender twilled handkerchiefs. Silver medal.

Peter Gruet, Orange, N. J., for the best silk wire. Silver medal.

J. S. Pierce, Burlington, Vt., for silk vest patterns. Diploma.

Hartford Knitting Co., Fisher, Howe & Hamilton, agents, 21 Broad-street, for silk knit shirts. Silver medal.

G. W. Thorp, 182 Pearl-street, for excellent specimens of printing on silk handkerchiefs. Diploma.

Stoves, Grates and Ranges.

Edward W. M. Savage, 248 Water-street, for the best cooking stove, for family use. Silver medal.

Seymour & Williams, 246 Water-street, for the second best cooking stove, for family use. Diploma.

Jordan L. Mott, 264 Water-street, for a good office stove. Diploma.

Wm. & N. Jackson, 238 Front-street, for specimens of parlor grates, of very superior workmanship. Silver medal.

Jordan L. Mott, 264 Water-street, for the best cooking range. Gold medal.

David Culver, 117 Beekman-street, for the best hot air furnace. Silver medal.

George Peirce, 292 Broadway, for a revolving roaster, a good and useful article for large establishments. Diploma.

Jordan L. Mott, 264 Water-street, for an agricultural furnace; a very useful article. Diploma.

Newcombe, Dixie & Co., Worcester, Mass., for stoves for burning tan and saw-dust. Silver medal.

O. Vanevery, 241 Water-street, for a ship's caboose, of excellent workmanship. Silver medal.

The sheet-iron stoves the judges deem of excellent workmanship and adaptedness for the uses intended. They make no distinction as to merit.

Surgical Instruments.

Geo. O. Jarvis, Portland, Maine, for a surgical adjuster. Gold medal.

Geo. Tiemann, 63 Chatham-street, for an oblique scarificator—a useful improvement. Diploma.

William Richards, Williamsburgh, L I., for an elastic tube for cattle. Diploma.

M. Holton, 11 Amity-street, for a spino-abdominal supporter. Diploma.

E. P. Banning, 423 Broadway, for trusses—an ingenious and meritorious improvement. Diploma.

B. Blagge, 48 Maiden Lane, for a self-injecting chair—a new and convenient improvement. Diploma.

James Gray, 119 Bowery, for artificial eyes. Diploma.

J. C. & D. Hyatt, 449 Broadway, for anatomical preparations. Diploma.

Thomas Ritter, 104 Cherry-street, for well constructed and neatly arranged medicine chests. Diploma.

J. Busteed, 331 Third Avenue, for a fracture-splint—an ingenious contrivance, for application to fractured thigh-bones. Silver medal.

Edward Welshman, 107 John-street, for a resuscitating apparatus. Silver medal.

B. F. Palmer, Meredith Bridge, N. H., for an artificial leg. Silver medal.

Jordan L. Mott, 264 Water-street, for iron chairs for schools. (Silver medal having been before awarded.) Diploma.

Tobacco and its Manufactures.

Samuel G. Cornell, 174 Front-street, for fine cut tobacco. Diploma.

W. A. Brintzinghoffer, Newark, N. J., for segars. Diploma.

Turning.

John H. Meade, 41 Hester-street, for the best specimen of oval frame turning. Diploma.

Shardlow & Brother, 118 Fulton-street, for a case of superior turning. Diploma.

S. N. Risley, 278 Fifth-street, for artists' brush handles. Diploma.

C. Smith, 42 Gold-street, for ebony and japanned knobs. Diploma.

Wigs and Toupees.

A. Gilbert, 179 Broadway, for the best wigs and toupees. Diploma.

Woolen Goods.

Northampton Woolen Manufacturing Co., Northampton, Mass., W. C. Langley & Co., agents, 25 Broad-street, for the best wool dyed black cloth. Gold medal.

D. W. Plumb, Derby, Conn., Fearing & Hall, agents, 55 Exchange Place, for the second best cloth. Silver medal.

New-England Co., Rockville, Conn , Thomas & Dale, agents, 53 Exchange Place, for the best fancy cassimeres. Gold medal.

Welcome Farnum, Waterford, Conn., Fearing & Hall, agents, 55 Exchange Place, for the second best fancy cassimeres. Silver medal.

Middlesex Co., Lowell, Mass., Wolcott & Slade, agents, 63 Pine-street, for the best plain cassimeres. Gold medal.

Seneca Woolen Mills, Gilman & Iddings, agents, 54 Pine-street, for the second best cassimeres. Silver medal.

Gilbert & Stevens, Ware, Mass., Thomas & Dale, agents, 53 Exchange Place, for fine white flannels. Silver medal.

Union Manufacturing Co., Norwalk, Conn., D. Brigham & Co., agents, 60 Pine-street, for felt beaver cloth. Diploma.

Lounsbury, Bissell & Co., Norwalk, Conn., D. Brigham & Co., agents, 60 Pine-street, for felt beaver cloths. Diploma.

Whitney Mills, Dover, Nesmith & Co., agents, 50 and 52 Pine-street, for the best woolen blankets. Gold medal.

Ballard Vale Co., Andover, Mass., W. C. Langley & Co., agents, 25 Broad-street, for black Orleans cloth and merinos. Gold medal.

Dorastus Kellogg, Skaneateles, N. Y., Wolcott & Slade, agents, 63 Pine-street, for silk and wool Tweeds. Silver medal.

J. Dunnell & Co., Pawtucket, R. I., Fearing & Hall, agents, 55 Exchange Place, for printed mouslin de laines and cashmeres, of very superior finish. Silver medal.

Middlesex Manufacturing Co., Lowell, Mass., Wolcott & Slade, agents, 63 Pine-street, for woolen plaid vestings. Silver medal.

Duncan & Cunningham, Franklinville, N. J., Richardson & Watson, agents, 43 Exchange Place, for shawls and table covers. (Silver medal having been before awarded.) Diploma.

Miscellaneous.

D. J. Browne, Brooklyn, L. I., for his work on trees of America. Gold medal.

T. C. Ward & Co., Newark, N. J., for specimens of seamless leather japanned hats. Diploma.

T. Sands & Co., Newark, N. J., for tarpaulin japanned hats. Diploma.

James Goadey, 155 Centre-street, for Venetian blinds. Diploma.

John Topf, 243 Bleecker-street, for a cane settee. Diploma.

William E. Rose, 13 Chambers-street, for gold mounted canes. Diploma.

Thomas W. McClallen, for hair lines. Diploma.

Calkins & Darrow, 28 Maiden Lane, for umbrellas, parasols and canes. Diploma.

Lee & Co., 309 Bleecker-street, for the best gause wire work. Silver medal.

James Rossiter, 556 Grand-street, for the second best wire screens. Diploma.

J. & J. C. Conroy, 52 Fulton-street, for a handsome assortment of fishing tackle. Silver medal.

Abraham Brower, 244 Water-street, for candle moulds. Silver medal.

J. G. Ward, Gloverville, N. Y., for superior buckskin gloves. Diploma.

Henry S. Farley, 23 Canal-street, for specimens of scagliola pedestals. Diploma.

Engelbrecht, Hale & Co., Newark, N. J., for "Seckdologer" fish hooks. Diploma.

F. & H. Pittis, 293 Pearl-street, for specimens of stencil engraving. Diploma.

Anderson & Brother, 1 Hanover-square, for specimens of comb shell work. Diploma.

J. E. Warren, 1 Hanover-square, for an ivory card case. Diploma.

J. S. Redfield, 127 Nassau-street, for a set of Wickham's juvenile slate tablets. Diploma.

Edwin Hazen, New-York, for the Grammatic Reader. Diploma.

Henry Liebenau, 491 Pearl-street, for an American standard. Diploma.

Philip Pietch, 13 Gold-street, for newspaper files. Diploma.

M. Sill & Co., 84 William-street, for metalic lustre. Diploma.

G. J. Tenney, Georgetown. Mass., Kimball & Brown, agents, 149 Broadway, for miners' and coal diggers' boots. Diploma.

Sewell & Alden, 117 Fulton-street, for Drummond's patent candle makers. Diploma.

Benham, Johnson & Co., 272½ Pearl-street, for specimens of stamped tin-ware. Silver medal.

Cool & Griffin, 265 West-street, for specimens of lime. Diploma.

J. M. Thompson, 283 Delancey-street, for a Daguerrian polishing table. Diploma.

J. M. L. & W. H. Scovill. 102 William-street, for a swing, a medium, quarter and half plate holder, and a buff stick for polishing Daguerreotype plates. Diploma.

Thomas B. A. Weiser, 43 Cedar-street, for glass picture frames. Diploma.

Ingram & Stuart, 338 Bowery and 826 Broadway, for a patent water closet. Silver medal.

C. J. Gaylor, 124 Water-street, for the best iron safes. Silver medal.

Silas C. Herring, 139 Water-street, for the second best safes. (A silver medal having been before awarded.) Diploma.

Kreischer & Mumpeton, 62 Goerck-street, for specimens of fire brick and tiles. Diploma.

R. W. Lowber, 261 Water-street, for tin plated lead pipe. Diploma.

J. Ball & Co., 112 Fulton-street, for specimens of water pipe. (A medal having before been awarded.) Diploma.

Charles Krause, 24 Charles-street, for specimens of fire proof roofing. Diploma.

Charles Luxton, 29 King-street, for an improved exercising swing. Diploma.

James J. Carpenter, Glen Cove, L. I., for specimens of fine sand and refined clay. Diploma.

William H. Post, 61 Mulberry-street, for a case of umbrella furniture. Diploma.

C. H. Preston, 102 William-street, for specimens of improved sewer brick. Diploma.

Jason Barton, Middle Haddam, Conn., for a globe bell. Diploma.

Alfred Serrell, Mulberry-street, for machine cut mouldings. Silver medal.

John J. Heines, 217 Greenwich-street, for an ornamental carved sign. Diploma.

U. W. Barker, New-York, for butchering and dressing mutton and lamb. Diploma.

DEPARTMENT

OF

AGRICULTURE AND HORTICULTURE.

REPORT

Of the special committee of the American Institute upon the farming animals offered for premiums at the Nineteenth Annual Fair.

The committee would premise, that by the direction of the *Board of Agriculture*, it was found to be expedient and necessary, to draw up instructions for the guidance of the various committees in the awarding of premiums, inasmuch, as hitherto it has been found that animals of inferior value, as regards *blood* or *pedigree*, had often had medals and plate bestowed upon their owners contrary to propriety; it was therefore decided, that rules hereafter should be prescribed, and the following directions were submitted to the gentlemen appointed as judges in conformity to the above intent, viz:

Instructions to judges of stock at the Annual Fairs of the American Institute. Adopted September 29, 1846.

The Board of Agriculture would respectfully address the committees appointed for the awarding of premiums upon the various breeds of animals which may be submitted for inspection, upon the necessity of adopting certain fixed *principles* and *rules* in deciding upon the merits of each description of Stock.

Hitherto, premiums have been awarded in many cases, when the animals were below mediocrity, and without due attention to the purity of blood or of origin; an error which, for the future, the Institute proposes to correct. It is therefore decided, that in all cases where an animal may not be of the first grade as a breeder, as regards form, size, blood, &c., no standing *medal* or *plate* shall be

awarded: but, where a case should arise of great merit in a part blood animal, a diploma setting forth facts may not be withheld, and should be granted.

As regards fixed principles and rules, the board of Agriculture lay down the following, viz:

First. All experience shows that "*like begets like.*"

Second. That from a "mixed blood animal" no reliance can be placed in procreating a *distinctive breed.*

These principles the board of agriculture request of the committee to carry out in all cases.

Relative to the *horse*, of all animals, these rules must be applied; as, from experience, the blood horse, or the horse of Arab origin, is that cast of horse from which all others have descended, and, to continue the race in perfection, the blood must remain *pure.*

From the full blood horse is derived beauty, speed, wind, strength and endurance, and to preserve these qualities, it is necessary to be careful as regards pedigree, and not to pass one about which there is any doubt, as is practiced in Arabia from all time to the present day.

A full blood horse, crossed upon a half breed mare, produces the famous chargers and hunters of England. A half blood is useful for the gears and all quick work; but the heavy, large, bulky, slow, dray horse of Flanders and England are found to be *unprofitable* in this country for every purpose. Our famous trotters are generally three parts thorough bred, and they distance in speed and stoutness all horses of any country.

The attention of the committee is called to another breed of horses, of a unique description, and unknown out of this country—the Canadian horse. This horse has, by chance, become almost a distinctive race, and remarkable in having two gaits—the trot and the pace, united often in the same animal, and of great swiftness. His blood has been derived from the crossing of Norman and English blood horses upon Narraganset mares; consequently you see commingled in the Canadian, the coat, hoof, speed and wind of the blood horse, and of the Narraganset; the broad chest, short back, large bone, and full, plump muscles of the Norman.

From the Narraganset he takes oftentimes, his high spirit, and the Narraganset was derived from the Andalusian horse, (of Moorish origin,) transported by Spain to America.

Thus the committee have the rule above laid down exemplified in the Canadian horse, and the utmost care should be observed in authenticating his pedigree, and medals or plate should be awarded him.

Relative to cattle, it is thought to be advisable to grant premiums to races of pure bloods, viz:

First. To the English short horned Bakewell breed.

Second. To the Devonshire pure blood.

These are races of animals, proved to be excellent for various purposes in this country, either kept pure in blood, or in crossing with native cattle.

Third. To native cattle of well authenticated breeds, as excelling for the yoke, the dairy, or for beef.

In all cases, proof of pedigree and statements of breeding should be required before granting premiums.

Fourth. For Herefordshire, Ayrshire, and all other cattle, a premium will be left discretionary with the committee.

Of *Sheep.*—The varieties are many, and should be carefully attended to as regards pedigree, form, size, and fineness of wool. The latter now becoming a staple commodity of our country, should in an especial manner be attended to. Samples should be taken by the committee and carefully ticketed and reported on, to be lodged at the Institute for general information. A detail of the names of the exhibitors, and their proofs of breeding, should be placed in the hands of the committee to entitle to a premium.

Swine.—Hogs are so valuable for their flesh, fat and oil, not only for domestic use, but as staple commodities, that the Institute think the committee should be very particular in inquiring relative to the most prolific and valuable breeds.

It has been usual for persons at agricultural meetings, to make themselves witty and merry on making up their reports on swine, most ridiculous in conception and abortive in declamation. That an

animal so valuable, and so necessary in producing staple commodities for a country, should be subject to ridicule, seems to have arisen from a false taste.

In this country, swine have been well reared, and for a long series of years fattened to a greater weight than known in other countries; and the flesh too, as pork, better than any other, from the fact of being fattened with Indian corn, the best food known for feeding the animal. The proof is in our late commerce with England, showing that prejudice has fled, and that American pork and hams are really to be tolerated, inasmuch as they have been found to be more firm, and as the English call it, "better fed," than their own Irish or English pork.

It is left for the committee to investigate and make known what breeds are found to be best, whether from Yankee land, the Middle, Western or Southern States, for the profit of the farmer, as there is no longer need to call on Europe or any other country for amelioration of our breeds of swine.

These instructions were not acted on by the committees to the extent intended by the agricultural board, as returns only of premiums were sent in, without giving reasons for granting the various awards, or on whom conferred, as was the intent and wish of the agricultural board; it therefore becomes necessary on the part of the special committee, to give descriptions of the animals, as well as to whom they belonged, not only in justice to them, but to the community at large. We commence with the useful and fanciful animal, the

Horse.

There were many varieties of the horse on the ground which gave high interest to the scene. The *first premium* of the silver cup was awarded to Mr. Robert L. Stevens, of Hoboken, N. J., for his horse Tornado, by American Eclipse, dam, Polly Hopkins, by Sir Archy; a thorough bred stallion of great beauty, possessing most of the requisites sought for, and required in the blood horse; thus much is said as a passing notice of this horse, but something more is due to Mr. Stevens, the owner of him, inasmuch as that gentleman to carry out an object of improvement, sent the dam, Polly Hopkins, to England, (where Tornado was foaled,) in order to meet the best stallion in that country, and she returned per packet, with her foal by her side. This fact is worthy of record, and shows that we have men in our community, who without regard to expense,

when improvement is the object, will step forth for the public good, and we trust Mr. Stevens will excuse us for having taken the liberty of mentioning his name.

The *second premium*, the silver medal, was granted to Mr. Absalom D. Nelson, of Greenburgh, Westchester county, for his blood horse, Belzoni, by Stafford, (imported,) dam, by American Eclipse, a blood bay, showing high breeding and strongly of the character of the Arabian horse.

Mr. George M. Patchen, of Brooklyn, was awarded a silver cup for his young trotting stallion, Cassius M. Clay, a remarkably fleet horse as a trotter; of a deep bay color, large size, and showing strongly traces of high breeding from various crosses of the blood horse, and will probably prove valuable as a stock getter.

The silver medal was also awarded to Mr. S. Freeman, of New-Jersey, for his fine horse, Napoleon. This animal from his fine size and general appearance of blood and good points was thought to be entitled to a premium by the committee.

Major William Jones, of Oyster Bay, obtained a silver cup for his brood mare; and a diploma for the colt by her side, she being the best brood mare and colt on the ground.

Mr. John H. Coster, likewise was awarded the silver medal for his brood mare, Gulnare, by Eclipse; dam, Sportsmistress, by Hickory.

The silver medal was gained by Mr. Samuel Hart, of Brooklyn, for a brood mare, useful for all farming purposes; as also a silver cup by Joseph Blakeslee, of Watertown, Conn., for a brood mare of the same description.

To Mr. Jesse Hobley, of Williamsburgh, a silver cup was awarded for the best colt on the ground of two years of age. A silver cup was presented to Mr. Bernardus Hendrickson, for his yearling colt Diamond, by Canada Chief, out of a Mambrino mare.

Silver cups were awarded to Mr. Charles Bathgate, and Mr. Thomas Bell of Westchester, for their fine farm horses, respectively presented at the fair. The silver cup was given to Mr. Willard S. Reed for a fine pair of matched horses. Mr. J. Fisher Sheafe, of New Hamburg, had the silver medal for a pair of fine geldings (matched horses). There were many other valuable horses and brood mares on the

ground, among which, many were awarded diplomas, as being of excellence, and entitled to more than a passing notice.

Of these we cannot but mention in some detail the three following stallions, which from some inadvertence did not come under the examination of the committee, a circumstance much to be regretted, as they are most undoubtedly entitled to medals or cups, and it is to be hoped, that hereafter, no such omission may take place at our fairs.

The first stallion we shall name, was the one owned by Mr. James Sanders, Chatham Square, named Young Alexander, by Alexander, (imported,) got by Smolensko, out of Wire, by Rubens—the best blood in England. His dam, by Sir Richard, Grey Highlander, Expedition; as regards blood, unexceptionable. As a horse, Young Alexander is remarkable; a blood bay, very black legs, mane and tail, without any white marks; sixteen and a half hands high; of fine presence, and high form at all points; with the quick, nervous action of a small horse, and of good temper, although of a high spirit. It is to be hoped that this horse may appear on the ground the next year, as also his stock, that justice may be awarded him, as the special committee have no hesitation in pronouncing him to be worthy of contending for the cup.

In much the same light, stand the stallions presented for competition as mixed grade horses, owned by Messrs. John Wire and Henry D. Waid, of Middletown, Conn.; both of them of the mixed blood of American Eclipse, Henry, Messenger, Magnum Bonum, &c.; more than sixteen hands high, of great bone, muscle, and sinew, as well as of fine action. They were grand parade horses or chargers. The one was called Henry by Henry, the other Henry Eclipse, being out of an Eclipse mare. These animals must prove very valuable for stock horses, from their high breeding, great size, and general good properties, and it is to be regretted they were either not on the ground when the committee acted, or were enclosed in their stables out of view.

To conclude, as regards the show of horses, there was every reason to be pleased with the fine collection of these animals, and the Institute, we are persuaded, will be satisfied their exertions and rewards are duly appreciated by the public.

Cattle.

The cattle at the fair, were as hitherto, of many varieties, and each distinctive breed of much excellence, and it was highly satis-

factory to witness the general emulation which existed among the breeders of them. It may not be presumptuous to remark, and it admits not of a doubt in the mind of this committee, that the inducements held out by the Institute of the award of medals, plate and diplomas, (setting forth facts worthy of record,) have caused more attention to be paid by our farmers to the improvement of their stock generally, as while contending for honest fame, their property might become enhanced in value. We have to record the names of many gentlemen who have given aid to the intent of the Institute, by personal exertions as well as by their wealth, in importing and improving the various breeds of farming stock; and we trust they may not be offended by the liberty taken, in making mention of them. We commence by noticing the animals brought upon the ground by Mr. Roswell L. Colt, of Paterson, N. J., all of pure blood, and of the following breeds, viz:

Devonshire.—A breed noted for their uniform beautiful red color, their compact smooth form, smallness of bone, aptness to fatten, excellent beef, rich milk, and general good properties for the dairy. As oxen this breed has proved to be valuable, being spirited and quick walkers, at the same time standing well the heat of American summers. A cross upon the native stock is strongly recommended for all purposes.

Ayrshire.—Of this useful breed of cattle Mr. Colt exhibited those of the improved sort, being larger than the old black cattle of Scotland, and partaking evidently of improved breeds introduced into that country from England. The bull was a compact, well formed, short legged animal of a black and white color, flaked equally, and did not vary materially from many of our native cattle; he was however thought to be worthy a premium of plate, which was awarded.

Alderney.—The specimens of this unique race of cattle were of pure blood, as shown by their peculiar yellow hair, small upright white horns tipped with black, and small deer like legs, delicate head, mild large eye, smallness of size, and well formed wide spread udder. This breed is famed for the richness of their milk, and high flavor of butter. It is well adapted for the use of people residing in cities; taking up little room, and living upon a small amount of food. For the dairy at large, the Alderneys may be useful in crossing with the view of improving the quality of milk; they are best suited however for cities as above stated, or for the poor man, who can only provide for one cow.

As usual, Dr. Pool, of New Brunswick, Thomas Addis Emmett, of New-York; Mr. Geo. Vail, of Troy, and others, carried off silver medals and cups, for their improved short horned Durham cattle, in which there was no falling off. Mr. Thomas Bell, and Mr. Lewis G. Morris, of Morrisania, also took the silver medal and a silver cup for their improved Durham bull and a calf by him of rare excellence.

It is with much satisfaction the committee has to report in favor of the native cattle, presented by many spirited breeders, among whom were conspicuous, Mr. Lewis G. Morris, of Morrisania, Mr. William Whitney, of Morristown, N. J., Mr. James Bathgate, of Fordham, Westchester county, Mr. James Weeden, of Newtown, Mr. W. Jarvis, of Brooklyn, Mr. Le Grand Bradley, of Hamden, Conn., Mr Josiah Purdy, of Rye, Mr. Selah Strong, of Milford, Conn., Mr. Joseph S. French, Mr. Blakeslee, of Watertown, Conn.; all of whom bore off silver medals and cups, we are gratified to say. Hitherto, native cattle at our fairs, have not been thus entitled to notice.

This improvement of our native stock has, no doubt, arisen in this vicinity by the competition which has taken place, and the emulation excited. It was a matter of great doubt among the farmers on the ground, whether the native cattle were not the very best at the fair; and especially so, on viewing the stock of Mr. Lewis G. Morris, and Mr. James Bathgate, of Westchester, which fairly vied if not excelled the imported short horns, Devonshires, and others. These native cattle spring from the old American varieties, crossed with Durhams, Devonshires, Holstien (imported,) Ayrshires, &c. &c ; all judiciously united, and valuable for all purposes, and especially so for beef and the dairy.

Of Herefordshire cattle, none were presented. It was a matter of regret that the noted herd of this breed of Messrs. Corning and Sotham of Albany, were not brought forward, as usual; as well as the short horned Durhams of Mr. Prentice of the same place. It is presumed they would have borne off prizes.

Sheep.

There was a good display, comprising Merinos, Southdown, Lincolnshire, Leicestershire and of common herds. Prizes were awarded to Mr. Blakeslee of Watertown, Connecticut, Mr. Whitlock of the same place, Mr. Bathgate and Mr. Thomas Bell of Westchester, Mr. Hallock, of Ulster county, Mr. Florence of Mamaroneck, Mr.

Robert Bolton, jr., of East Chester; Mr. John Brewster, of New-Jersey; as also, the Silver Cup, to Mr. Charles Blackbourn, of Bedford, L. I., for his remarkably fine Lincolnshire sheep. This gentleman, as a constant exhibitor of this valuable and noted breed of sheep is particularly noticed, inasmuch, as there appears to be improvement in his flock from year to year, not only in fleece but in form and size, which shows that by good judgment and management, foreign breeds of sheep may be kept up and even made better than those originally imported from other countries. Mr. Blackbourn, himself a farmer from Lincolnshire, confirms by his experience, the above improvement upon the original breed.

Among the specimens of sheep, was a native buck of mixed merino breed, having a fleece upon him of five years growth, twenty four inches in length, fine in quality, and was judged to weigh twenty-five pounds. This fact shows that the merino breed of sheep will furnish wool for worsted of any length necessary, and of a fineness unequaled by any other variety of sheep. Samples of the wool can be examined at the Institute.

The exhibition of swine and poultry of various breeds was extensive and valuable; consequently many prizes were awarded.

In behalf of the special committee on stock.

CHARLES HENRY HALL, *Chairman.*

American Institute, October, 1846.

REPORTS

Of the Committee from the Board of Agriculture, on the Plowing and Spading Matches, October, 1846.

The committee of the Board of Agriculture of the American Institute, in compliance with the duty assigned them, attended the plowing and spading matches at Flushing, Long Island.

The day was most delightful, the sun shone with its brilliant autumnal splendor, and a gentle breeze added to the enjoyment.

The committee left Castle Garden in the steamer furnished by Capt. Peck, at the reduced charge of one shilling a passenger; this, together with the other boats were crowded with both male and female passengers; the ladies having honored the occasion with their presence. The Governor's Island band of music, furnished by the politeness of Col. Bankhead, enlivened the scene, and cheered us on our way.

On arriving at Flushing an immense concourse of persons greeted the arrival of the committee, which was announced by repeated peals of artillery. An equipage of an unusual kind was prepared for the reception of the band, consisting of a team of thirty-seven yoke of oxen, which moved with perfect ease and regularity; omnibuses were provided for the committee. It was really gratifying to observe the immense number of persons collected to view the scene, and to receive the greetings of the fairest portion of creation from the balconies and windows as the procession passed through the several streets. It is presumed that upwards of four thousand persons were present. The interest exhibited, affords another ample demonstration that this branch of the American Institute is yielding *practical* benefit to the public, and that a taste for agriculture and its improvement is natural to our citizens.

The field selected for the display of the exertions and skill of our farmers and home manufacturers, was well chosen. The ground, however, was very hard and dry, and the day rather warm for the arduous contests which took place. Yet, the competitors exerted their energies, and after an hour's contest the work was carefully viewed by independent and judicious persons selected as judges, and the premiums awarded as follows:

The first premium of a silver cup, for the best plowing, to No. 8. The second, of a silver medal, to No. 7; and the third, of a diploma, to No. 9; and your committee find the names of the successful plowmen attached to their numbers as follows: The first premium to Asa Munn, of Orange, New-Jersey. The second, to Philip Arent, of Flushing, and the third, to John Brewster, of English Neighbourhood, New-Jersey.

The contest in the spading department was also very spirited, though few competitors entered for the premiums. The crowd around these hardy workmen was very great, and deprived them of the benefit of the refreshing breeze; however, they all persevered to the accomplishment of the allotted work except one, whom the judges however deem deserving of a premium. The first premium of a silver cup, for the best spading, was awarded to No. 1; the second, of a silver medal, to No. 8; and the third, of a diploma, to No. 7. The names appended to these numbers are, Thomas Farrell, of Flushing, who is entitled to the first premium; William Hubbs, of Flushing, who is entitled to the second; and Joseph Morrell, of Gowanus, to the third.

The draft of the several plows offered for premium, which is the most important of the agricultural implements, was practically tested by the Dynamometer, and the judges reported, that the improved plow of *John Moore, No.* 183 *Front-street, New-York*, as "combining the greatest number of necessary requisites," was entitled to the first premium of a silver cup, and that *David Brontes, No.* 86 *Nassau-street, New-York*, was entitled to the second premium of a silver medal.

While these operations were progressing, the multitude were entertained and instructed with the eloquent remarks of Judge Meigs, and General Dearborn, of Boston, who delivered their addresses standing on a cannon, placed under the wide spreading branches of the "Fox Oak," so called from this great orator of the society of Friends,

from having under its branches, in the year 1661, addressed a numerous audience, and is worthy a visit apart from its historical associations.

Gen. Dearborn was most happy in his allusions and forcible in his application of the principles which sustain our own American manufactures, and was enthusiastically cheered by his numerous auditors. The repeated discharge of artillery, annouced the decision of the judges, and the committee and music left the "field of renown."

An invitation from the Queens County Agricultural Society, which had most happily chosen the same day for their fair, was accepted by the committee, and we take pleasure in stating, that the whole was most tastefully and judiciously arranged in a booth of one hundred feet diameter, and the exhibition of the agricultural and horticultural products were such as will require the utmost energies of the Institute to surpass. The committee thus publicly return their thanks for the hopitality and attention received from the citizens of Flushing.

All which is respectfully submitted.

(Signed) PHILIP SCHUYLER,
Chairman Committee.

New-York, October 9th, 1846

REPORT

Of the committee on Field Crops, on the farm of Mr. David S. Mills, of Newtown, Long Island.

The committee consisting of Messrs. Skinner, J. J. Mapes, Underhill, Field, Townsend, Bell, Van Wyck, and Meigs, of which Col. J. S. Skinner was chosen chairman, beg leave to report:

That they went to the farm of Mr. Mills, about five miles from Williamsburgh, were most hospitably received by the proprietor and his family; and passed the day in examining this fine farm. Two hundred acres are divided into nineteen sections by regular built stone walls, of from four to five feet high; all the stones of which were taken from the fields, leaving the soil free from all impediments to the plow, hoe, or harrow. Mr. Mills supplies a large quantity of pure milk at six cents per quart, to the city of New-York. The first remark of Mr. M., in answer to a question, whether green corn stalks formed good feed for cows, was, that if the stalks are given to cows after the ear of corn is formed on the stalk, *it always gripes them, and if continued as feed, always kills them!* After the corn is ripe this effect entirely disappears.

He remarked, that oats in the milky state are good for cows. Experience had proved to him that the corn stalks were one of the best means of soiling cattle. He cuts them as soon as they tassel; sows broad-cast five bushels of corn on an acre. The stalks must be for many days, perhaps a fortnight, exposed to the sun and air and carefully turned over, that they may be properly cured. For feed he cuts all his corn stalks, hay, &c. As manure, he uses among other things, charcoal, and burned bones; the charcoal from the retorts of the manufacturers of pyroligneous acid, and the pyroxylic spirit. He relies for the profit of his farming chiefly on the milk of his cows, of which he now has upwards of fifty.

He has tried the Durham breed, and found it expensive to raise them. His present stock is a mixed one, having some fine milkers among them. He had some time ago in his herd, eighteen cows

which gave on an average, twenty-five quarts of milk each per day. Mr. Mills has a barn which reminds one of the stone edifices of Lancaster, Penn. Its walls are two feet thick, one hundred and fifty feet long, and forty-five feet wide, two stories high. The first floor has one hundred spacious stalls for cows, each in perfect order. A chain attached to the middle of the manger below the curb, is passed over the neck of each cow, and secured by a key passing through a link, leaving the head of the cow at liberty. Channel ways of plank, lead off all the urine to a vat below the surface of the ground, made of stone, cemented on the inside, and decked over with plank; having a trap door to draw it out, or for a pump. This vat is twenty feet long, eight feet wide, and ten deep; and is now more than half full of urine. This he sprinkles over some of his crops; and the effect of its energy on broad-cast corn crop was observed by your committee to be very strikingly fertilizing.

We remarked that the crops of wheat, barley, rye, clover and timothy mixed, had filled their respective fields to the level of the stone fences, looking as if they afforded a full heaped measure of crop. We examined an eight acre lot of wheat, which had been seeded down with lucerne. The lucerne was thriving, and the wheat estimated to be a crop of thirty bushels per acre; having very strong stalks. This lot was manured with city street sweepings, and best barn yard manure. The wheat was Mediterranean, raised here two years ago. The standing crop was planted in frosty weather, in the latter part of last October, did not come up till spring, and was ploughed in about four inches deep.

We examined a five acre lot of corn growing well, which had the lime used in a glue factory put into the hills.

Another lot of twelve acres of corn, was manured with peat or muck, from Jamaica Pond, and also some of the glue factory lime. This field is very promising. The lime used was mixed, one of lime to five of muck.

We examined two five acre lots of hay, bearing heavy crops; a clover field, the second growth this season, very strong and beautiful crop.

Also a nine and an half acre lot of white flint Jersey wheat, a strong growth, estimated at twenty-five bushels per acre. This field bore last year nineteen hundred bushels of potatoes, which were sold for an average of fifty six cents the bushel. Mr. Mills sowed here

two bushels of seed wheat, which he had soaked in brine and then rolled in lime and plaster, mixed half and half. He gave this field last year, after the potatoes were off, a slight sprinkling of city street manure.

We examined a lot of nine and an half acres of potatoes in fine cultivation; we saw no weeds in the field, but all the walls were decorated with the dried ones taken from the field, and "*hung there, on the outer wall!*" These walls have cost Mr. Mills four dollars a rod in their construction. Mr. M. used ten bushels of potatoes cut up small for planting this field. We saw a fine field of Lucerne. Mr. M. has lettuce, single heads of which weighed about three pounds. He employs from twenty to twenty-five hands, a dozen horses, and four yokes of working oxen; one pair of which, at the command of one of Mr. Mills's sons, sank side by side upon their knees, and so remained until ordered to rise. Active, strong, and docile, it would require some training of a pair of men to perform their movements as well as these noble cattle. We thought of the old Roman maxim, much "cattle, much wheat," and of the weighty arguments in favor of the ox, alive and dead.

Mr. Mills has three teams of mules, which are as large as horses, and well trained. One of them was driven by a son of Mr. M., in harness, in a sulkey; and his spirited action, and handsome form at a little distance, would have passed him off for a smart horse if his long ears, and Spanish lady little feet had not undeceived us. These fine qualities of the mule, when we consider his great hardihood, and long life, most powerfully recommend him to the farmer, who when he has made such walls as these, ought to have such mules to till his fields for forty years.

Mr. M. gives his cows indian meal, oil cake, cut hay, &c. In the winter, brewers' grain and no swill. Your committee were highly gratified with this visit—having now seen a farm, walled to last for an hundred years, full of cattle, and much wheat, managed by an intelligent, industrious, and happy father, and his lively, healthy sons, whose home was full of all good things; vigilantly superintended by the mother, who is strong and active, and has borne eleven children. Such farmers as these will make any land rich, and will never, like their oxen, bow the knee to human beings.

Respectfully submitted,

J. S. SKINNER, *Chairman*

HENRY MEIGS, *Secretary*.

New-York, July 3d, 1846.

REPORT

On the farms of Messrs. Bell and Morris, and Gouverneur Morris, of Morrisania.

That they, that is Messrs. Underhill, Wakeman, Bridgeman, Skiner and Meigs, proceeded to Morrisania, and on motion of Mr. Wakeman, they unanimously added to their number, in pursuance of the power given them, the following members, viz: Vice President J. J. Mapes, James De Peyster, and Samuel Fleet; Dr. Underhill was chosen Chairman, and Henry Meigs, Secretary.

The committee first visited the farm occupied by Mr. Thomas Bell, being four hundred acres, part of the farm of six hundred acres belonging to William H. Morris, Esq. Mr. Bell has but recently commenced his agricultural labors on this farm, which however, already presents highly interesting features. The liberal and judicious measures pursued by Mr. Morris relative to this farm, are striking. He has caused fences of stone to be made in the best manner to the extent of about five running miles; the main avenues being about two rods wide and turnpiked; the fence bordering these being so uniform and level on their tops that several members of your committee walked on them a considerable distance for the better view of the crops.

The stone forming these fences had formerly encumbered the ground, and when they were all removed from the land, were found just about enough to form the walls, which are calculated to last many generations. The fields are many of them about ten acres each.

One ten acre lot has a very fine crop of barley upon it, with clover and timothy grass growing well. This crop, it was considered, would be about thirty bushels per acre. One year ago this field was an old worn out sod, so exhausted that it would scarcely sustain one

sheep on an acre. It had been pastured for ten or fifteen years. A year ago Mr. Bell prepared it for corn, by putting on it forty two horse wagon loads of barn manure, and plowing it deep, first one way and then across. He got from it more than forty bushels of shelled corn per acre, or upwards of four hundred bushels from the ten acres. Last fall he cut off the corn stalks close to the ground; this spring he plowed it twice, early in April, crosswise, then harrowed it four times, once before sowing the barley and three times afterwards. He sowed two bushels and an half of seed on an acre. Mr. Bell said, when questioned by the committee, as to the quantity of seed proper to be sown, "*The richer the land the more seed do I put in*, and this field is now seeded with clover and timothy, at the rate of one peck of each per acre. I prefer barley to oats for my stock, because my barley weighs *forty-eight pounds* to the bushel, and oats but little more than *thirty*."

Your committee then examined a ten acre field of Indian corn, a large portion of it manured with guano; another with best barn yard manure, broadcast, and four rows with best barn yard manure in the hill. The guano was mixed with twice its quantity of loamy earth, and then put into each hill a small quantity and a little soil over that, so that the seed was not in contact with it. This corn looked very well, not a hill appeared to have been injured by the guano, and the color and growth was similar to that part of the field where the barn yard manure had been applied broad cast. But Mr. Bell called our attention to the four rows in the middle of the field, in which he had put the best barn yard manure in the hills, and we were surprised at the superior size and vigor of the plants in those four rows. Mr. Bell showed us two rows in which he had put no manure, and the plants in these were *equal to those* of the guano growth, (at this date, but we have since learned from Mr. Bell that the portion of the field manured with guano is gaining and indeed surpassing some of the other parts.)

We saw the stock of Mr. Bell; among them seventy-four cows, and his justly admired bull Marius, whose figure deserves to be preserved in painting. He is now three years old, and this season *is sire of more than one hundred calves*, some of which are taken by Mr. Bell from their mothers at three days old, and always fed with milk by his own hand. They came around your committee, licking their hands with all the perfect familiarity of favorite dogs. One large cow giving twenty-six quarts of milk per day, was purchased by Mr. Bell from an honest Quaker, who offered her to him for sixty

dallars; when Mr. Bell objected to the price as too high, the Quaker replied, "She will give thee a *bushel of milk a day.*" Mr. Bell has found this to be true, and he says, that in two years past her milk has been worth to him about five hundred dollars. The accommodation for the cattle in stables were examined and highly approved. In each stall a chain for the neck of the cow has a ring, which traverses freely on an upright on the left side of the stall, so that the cow has perfect freedom in all the movements of her head. These stalls were all filled with fresh barley stalks, ready for the repast of the cows, which are always placed here during the night. Mr. Bell is a thorough manager of manures, nothing is lost.

Your committee examined an eight acre lot of rye. This field had lain fallow, and Mr. Bell had put upon it nearly one hundred loads per acre of decomposed vegetable matter, and soil from a pond which was then dry. He plowed it in deep with two yoke of oxen. He sowed it last fall with about two bushels of rye, and one peck of timothy; and in March last he sowed also on it a peck of clover seed per acre. This crop appered to be a very good one, the clover and timothy are growing well, and the stalks of the rye are large. It was suggested by Mr. Bell, that the stalks seemed not to have sufficient strength, perhaps wanting more of the silex. The chairman thought that lime would have rendered the stalks stronger.

Mr. Bell has three yoke of working oxen, employs on an average six good men, and six horses. He pays a man one dollar an acre for mowing, and half a dollar for cradling. These men find themselves. He gives his cows in the stable, in winter, four quarts of Indian meal, one peck of ship stuff, mixed with an half bushel of cut hay, all mixed with water, and a little salt per day. This quantity is divided into two meals for each cow. When hay is scarce, he uses brewers' grains, which are far superior to swill. These grains cost him six cents a bushel and two more to get them on his farm. He presents in all his agricultural labors, an example of cheerful, intelligent, neat and happy farming.

Your committee were hospitably received by Mr. Bell and Col. Morris, the proprietor of this fine large farm.

They then proceeded to the farm of Gouverneur Morris, which contains fourteen hundred acres. They found the landlord engaged with his men in the multiplied labors of his spacious fields. Here we saw his vegetable garden of sixty acres, covered with every va-

riety of vegetables adapted to the New-York market, to which he constantly sends a great amount of the best. There are two acres in peas, three in rhubarb plant, fifteen in early potatoes, from three to four of beets, two of carrots, about two of leeks and parsley, and ten of cabbages of all sorts, about two of lettuce, 150,000 celery plants, one acre of parsnips, one of onions, 3,000 egg plants, five acres of tomatoes, and five of sweet corn, large quantities of fruits, and a great many acres of vegetables which your committee had not time to examine. Mr. Morris uses a hot house of two hundred feet in length for forcing early plants. It has a ridge of shingled roof the whole length, reaching about half way on each side to the ground. The lower parts of this roof are so many frames for glass, which are readily removed or replaced when necessary. Within the long cellar there are double rows of beds of rich soil, contained in plank boxes under which are flues, which receive their heat from furnaces. This was now filled with flourishing cucumber vines, loaded with fruit. The gardener walks between these long boxes, and has all their products within the length of his arm. This arrangement appears to be an excellent and economical one.

Mr. Morris has now 110 cows on this farm of all kinds; looks only to the quality of a cow as a milker. He puts all the milk of each milking into large tin vessels, which are immersed to their tops in spring water filled with cakes of ice, so that it always reaches the city in good condition. His revenue from the sale of milk, for the last three years has been about $17,000 per annum.

Your committee examined a large field of corn manured with poudrette, which was equal in appearance to any they have seen. The difference between that and the portion manured with barn yard manure was hardly discernable. The committee examined a large field of barley, which was considered to be of extraordinary growth, so that there seemed to be *too much* barley upon it.

The chairman on viewing the meadows of this great farm, called the attention of the committee to the inexhaustible masses of matter in them, easily capable of being converted into manure for the numerous high grounds of the farm.

Your committee have no difficulty in recommending these farms, on the ground of their being profitable. Whoever tries to employ more sincere and hard work, under the direction of practical men,

than is done on these farms, must be up *rather early* in the morning, as well as all day.

Gouverneur Morris gives his men an interest in the crops, so that their extra exertions count into their own pockets, as well as his.

All which is respectfully submitted.

(Signed) R. T. UNDERHILL, *Chairman.*

HENRY MEIGS, *Secretary.*

New-York, June 26th, 1846.

REPORT

Of the Committee on Field Crops of the American Institute on the garden of Henry Smith, of Astoria, and on the farms of William J. Townsend, of Astoria, and Samuel B. Townsend, of Newtown, Long Island.

To the American Institute:

Your committee appointed to examine field crops, respectfully report:

That they visited Astoria on the 9th inst., and were there met by Mr. Wm. J. Townsend, who kindly placed his carriage at the disposal of the committee to convey them from point to point.

They first visited the garden of Mr. Henry Smith, a few minutes drive from the ferry, occupying some two acres and a half; soil a dry loam. One acre surrounds the house, part of which is devoted to the culture of flowers and fruit, the remainder to culinary vegetables; the marrowfat peas, lettuce, beets, &c., were of fine appearance.

Mr. Smith called the attention of the committee particularly to his gooseberries, which were of large size and delicious flavor, and free from mildew; while those of his neighbors around have been entirely destroyed. He manures them well with barn yard manure, and is careful to cut all dead wood from the bushes. He has not suffered from insects this season; in one instance only a small tree was stripped of its foliage. About one acre is divided into lots and cultivated as follows:

A small portion of Illinois corn for cattle, producing at the rate of 100 bushels per acre. Sweet corn for the table, of good size and looking well; potatoes, early sovereigns now ripe, and being used daily; later varieties of the Devonshire, red and French yellow, the

vines are all free from the slightest appearance of disease, manured with barn yard manure. Sugar beets for cattle, produced last year on an eighth of an acre, 150 bushels; melons, &c.

The stock consists of two cows of the Ayrshire and Alderney breeds, and two pigs, a cross of the Chinese and Berkshire, the latter six months old and very large. During the summer the cows are kept in pasture, and occasionally fed with green oats, in winter with sugar beets and hay. The Ayrshire cow has given for some time, *thirty-eight quarts of milk per day*, milked three times; her average yield from August 18th, to October 1st, 1845, was twenty-five quarts per day. The yield of the Alderney, though not as large, is much the richest. From the 22d of April, to October 1st, 1845, they gave together 5,527 quarts, a portion of which was sold to the neighbors and the remainder used at table, and made into butter. The amount of butter made from January, 1845, to January, 1846, exclusive of the milk and cream sold and used by the family, was 250 pounds. The apartments for poultry are well arranged; from 22 hens were obtained in one year 2,578 eggs.

Mr. Smith has been very successful in the cutivation of Cape Broccoli, having heads last fall the pulp of which measured two feet seven inches in circumference. He prepares the ground entirely with cow manure; sows the seed in May, and transplants the latter part of August.

Your committee were shown an Isabella grape vine, said to be 25 years old, which previous to the present season, had ceased for several years to bear fruit. By way of experiment, Mr. Smith had a portion of a dead horse that had floated ashore near by, carted up to the grounds and buried near the vine, which is now covered with clusters of fine grapes. To waste nothing which may be converted into manure, is as he expresses it, the "great secret of profitable farming." Considering that he employs the assistance of but one man, every thing being conducted with such order and economy; and that from less than three acres, he is enabled to supply a family numbering thirteen persons with all the necessaries of life, your committee deem him entitled to great commendation. The house is located on rising ground, commanding a view of the surrounding country of great beauty.

After partaking of a liberal entertainment, your committee, at the request of Mr. Smith, visited the farm of Mr. John H. Smith, near

by, for the purpose of viewing the beautiful Arbor Vitæ, and Beam Thorn hedges, by which it is divided. The first named being an evergreen, continues clothed the whole year. Five or six years will suffice to produce hedges of great beauty, presenting impassable barriers to the inroads of cattle. Their uniformity, and pleasing relief to the surrounding landscape, drew forth many expressions of approbation. Col. Skinner, who has travelled through many of the States, remarked, "he had never seen anything equal to them in this country."

Your committee then proceeded to the farm of Mr. Wm. J. Townsend, comprising 27 acres; 20 of which are now under cultivation. Soil a light dry loam. This farm when purchased by Mr. Townsend, two years ago, was worn out land. By highly commendable industry, and the use of fertilizing manures, he has brought it to its present state of productiveness. One lot of seven acres, now growing corn, had never been plowed before for forty years, the slope being so great, as it was supposed by the former proprietor, as to preclude the possibility of using the plow in turning the sod. Its present appearance proves the old adage true, that "where there's a will there's a way." The yield, it is conjectured, will be seventy-five bushels per acre. Most of the manure used on the farm is made by Mr. Townsend, being a compost of peat, *refuse woolen* obtained from a carpet factory near by, soap suds, &c., mixed with lime. He applies 30 loads per acre, valued at one dollar per load. A field of rye, part of which was cut was supposed would yield sixty bushels to the acre; manured with poudrette at the rate of sixty bushels per acre, costing thirty-five cents per bushel. The rye is followed by a fine crop of clover, now high above the stubble.

The Lima beans numbering 1400 poles, looked very promising. Your committee were shown some six-weeks beans, manured with Guano, of very fine growth, but not seeing any others of the same planting differently treated, were unable to judge of its effect. In six acres of potatoes examined, no signs of the rot were discovered. The early varieties now fit for market, yield 100 bushels to the acre. A field of early sweet corn, about three-fourths of an acre, now in the silk, looked very fine. Seven acres from which a first crop of different vegetables have been taken, he is now about sowing for a second. Mr. Townsend stated that he had sold already, 3,300 early cabbages at from $4,50 to $5 per hundred, and expected to get 80,000 of the winter variety from those now set out. A thorough bred pair of Devon oxen, five years old last spring, were much admired They were raised in Connecticut, and cost $100.

From the short time that Mr. Townsend has occupied his farm, the labor required and perseverance displayed in bringing it from a state of waste to its present condition, entitles him, in the opinion of your committee, to great praise. They then accompanied Mr. Townsend to the farm of his father, Sam'l B. Townsend, of Newtown.

His farm contains 131 acres; soil, a dark loam, with a slight proportion of sand. They inspected a field of Canada flint wheat, containing 14 acres, looking well; probable yield 25 bushels to the acre. The Scotch imperial oats, 7½ acres, presented a beautiful appearance. Crop very heavy, sown two bushels of oats to the acre; no manure applied this year.

The corn was far superior to any seen elsewhere this season. Fifteen acres manured with barn-yard manure at the rate of 15 loads per acre, each load being equal to 42 bushels, will probably yield 60 bushels to the acre. A field of two and a half acres bearing timothy, manured with barn-yard manure, 15 loads to the acre, presented a fine appearance. Your committee examined a field of clover partly cut, of two acres, manured three years ago with poudrette, 60 bushels to the acre. First crop was wheat. Second year no manure applied and sown with timothy; this year likewise, not manured, and sown with clover; the second crop of which is being cut and sold in market green, for $4 per hundred bundles; equal to $40 per ton as hay.

There were eleven acres of potatoes, manured with barn-yard manure, in which not a case of disease was seen. The present yield of the early variety is 100 bushels per acre; the fall crop, it is thought will amount to 250 bushels per acre.

Examined a field of fourteen acres bearing a fine crop of common oats. This field has not been manured for five years, and sown each season with oats. Two acres manured with lime, 100 bushels per acre on the sod, and then turned over and sowed with corn manured in the hills a year ago last spring, produced 65 bushels per acre; sown this year with oats, no manure, thought will yield 80 bushels per acre.

Mr. Townsend has been very successful in the use of poudrette as a manure. He first made trial five years ago, of that obtained from the Lodi company of New-Jersey, but found it inferior in fertilizing properties to the article prepared by the Poudrette company of New-York, which he has since used. In addition to the poudrette, he has placed on his farm this season, 800 loads of manure prepared as

follows: From the low, swampy grounds, he carts out in the fall a quantity of peat which is exposed to the action of the sun, and when dried, removed to a cellar beneath his barn, the floor of which is so constructed that the urine of the cattle may pass through and be absorbed by the peat. In the spring it is taken out, mixed with lime and placed upon the ground.

His stock consists of seven cows and five horses. The milk sells at the door for two and a half cents per quart. In conducting the labors of the farm, he is aided by his son, one steady hand, and two small colored boys, one seven and the other thirteen years of age. The latter handle the plow and cultivator, and your committee were surprised to hear he had gone over the corn field five times with the cultivator; they are much liked by the family, active, and willing to work. In addition to these, two other hands are employed in the harvest season. After inspecting the crops, your committee returned to the house, and were introduced to the members of Mr. Townsend's interesting family.

Mr. Hall on behalf of the committee, returned thanks for the kindness of their reception, and facility afforded in carrying out the objects of the visit. He dwelt in a few remarks on the advantages of agricultural pursuits as a source of health, happiness and prosperity, and in alluding to the farm, the absence of all complaint of the ravages of insects, its high order of cultivation, and the economy of its management with a view to profitable farming, looked upon it as being far superior to any he had seen for several years, which opinion received the hearty concurrence of your committee.

For the hospitality extended them, they would return their sincere thanks. The abundance and variety of the well filled board, proved that the husbandman's reward is sure. The picturesque scenery of different sections through which they passed, the beautiful fields of waving grain, ripe for the sickle, that met the eye on every side, and the various private residences, among others those of Messrs. Stevens and Mulligan, adorned by the beauties of nature and art, elicited from your committee frequent expressions of pleasure and approbation.

Respectfully submitted.

(Signed,) CHAS. HENRY HALL,
T. B. WAKEMAN,
JAS. J. MAPES,
J. S. SKINNER.

J. C. Parsons, *Secretary.*

REPORT

On Gen. Johnson's Farm.

The committee appointed by the managers of the Nineteenth Annual Fair of the American Institute, to examine the farm of Gen. Jeremiah Johnson, of East Brooklyn, most respectfully report:

On Tuesday, the 20th inst., the committee made a visit to the residence of General Johnson, for the purpose of performing the duty assigned them. The General received them in person, and conducted them over every part of his extensive grounds, and through the stables and other out-buildings; also through the manure yard, and giving the committee ample explanations as they proceeded.

For the high state of cultivation of the fields, the mode of manufacturing manure, the condition of the horses and cattle, the cultivation and fine breed of fowls, and the entire arrangement of the farm and buildings, the committee cannot speak in too high commendation.

About 100 acres are under cultivation, forming an immense vegetable garden as follows: Seventy acres of this land are divided into ten allotments, which are cultivated by nine German and one English gardener, who raise vegetables for the markets, and the balance of the farm is cultivated by the General and son.

The present year he raised five acres Indian corn, four acres of cabbages, one acre beets, half an acre carrots, four acres potatoes, cut nine acres of Rhubarb (or pie plant,) and mowed twenty acres grass; fifteen acres of the grass was cut over twice; and a great variety of other vegetables, as celery, lettuce, spinach, tomatoes, leeks, &c. He keeps eight horses, and six milch cows. He stables the horses summer and winter, and cuts grass for the cattle from May to

August, then he grazes them until December. At times during the summer there are as many as eighty persons employed on this farm.

Among the objects which most attracted the attention of the committee, was the mode of cultivating early vegetables, by sowing the seeds in the fall of the year, and bringing the plants to a certain state of forwardness, and protecting them during the winter; by this mode, he anticipates some ten days the vegetation raised in hot beds. He has also extensive arrangements for hot-beds, to raise such plants as will not endure the other modes of cultivation.

The shortness of time allowed the committee for examination and making up their report, will not allow them to give all the details necessary to do ample justice to this farm.

The committee take pleasure in recommending it to the high consideration of the premium committee of the present fair.

Most respectfully,

(Signed,) E. T. BACKHOUSE,
MARTIN ELLSWORTH.

New-York, October, 1846.

REPORT

On the Corporation Farm on Randall's Island, worked by pauper labor, under the charge of M. G. Leonard, Esq.

The undersigned, from the Farmers' Club, on the invitation of Moses G. Leonard, Esq., commissioner of the Alms House department, having visited Randall's Island, on the 5th inst., in company with his honor, the Mayor, several of the Aldermen, and other citizens, ask leave to report:

That Mr. Leonard's object was to present to the citizens some knowledge of the success which has thus far attended his endeavors to cultivate this farm by pauper labor. It affords us much pleasure to bear testimony to the excellence of his arrangements, and the great promise which is thus far afforded of signal success. Since the failure of an experiment, attempted some years ago on the Long Island Farms, it has been deemed impracticable by many to cultivate the soil advantageously by pauper labor. But, after witnessing the progress made under the direction of Mr. Leonard, we are far from adopting any such conclusion; on the contrary, we feel much encouragement to believe, that by steady perseverance in a well devised plan, the paupers of the city may be made to contribute largely to their own support, without exacting from them a greater amount of labor than will be found essential for their own comfort and well being. But it cannot be expected that any plan, however well devised for the accomplishment of an object so desirable, will prosper, if the supervision of its details is doomed to continual change from one to another. Once under the supervision of those having the requisite qualifications, it should not upon slight cause be changed.

Randall's Island is about nine mile distant from the City Hall, lying between Haerlem and Long Island. It forms on one side a part of the east bank of the Haerlem River, and on the other side a part of the west bank of Long Island Sound, with narrow channels on the north and south, difficult of navigation. It contains 138 acres of marsh and upland. Some of the best fields on the Island, however, have been rendered unfit for immediate tillage by the erection and destruction, of the buildings, by fire, intended for the accommodation of the poor of the city.

Mr. Leonard did not get possession of the Island until the middle of May last, at which time no preparation had been made for producing a crop. Nevertheless, he has secured from 80 to 100 tons of excellent hay. There are two fields of Indian corn, containing five acres, equal in appearance to any we have seen, averaging full twelve feet in height; one field of six acres bearing potatoes, one of buckwheat, four acres, and one of turnips, one and a half acres; all in excellent order, and of fair promise; also, 2,100 heads of cabbage. From the 15th of June to the present time, 40 cows have been milked, furnishing daily 300 quarts to the nursery on Long Island, where there are 700 pauper children, reserving as much as is required for the farm. There have been two very comfortable buildings erected on Randall's Island for the accommodation of the laborers, and there is a stable now in process of erection intended for the cows in winter. All this is entirely the result of pauper labor.

We sincerely hope that Mr. Leonard may be permitted to go on and carry out the plans he has intimated to us, of furnishing labor to all the inmates of the establishment capable of performing labor, stimulating them by a system of rewards, which will call for no additional charge upon the city, and if successful, will materially lessen the cost of maintaining its paupers. The Island is the property of the city, having been purchased from the Messrs. Randalls, in 1832, for $60,000. There could not be a better place for the experiment than is here afforded. The milk alone which has been already furnished, estimating it at four cents per quart, provided the quantity should be continued, will amount to more than seven per cent. per annum, on the cost of the Island, and so far there have been but seventy paupers employed. There are in the establishment nearly five hundred that may be employed in agricultural labor, besides a large proportion of the children, whose labor at particular seasons of the year, may be made extremely valuable.

It is not extravagant to estimate that the seventy paupers, employed on Randall's Island, have thus far maintained themselves, and produced a surplus which would be equal *to over* $4,000 *per annum.* If then, the whole 500 could be engaged in agricultural labor, with corresponding advantage, together with the occasional labor of the children, in addition to their own maintenance they would produce to the city a revenue of $30,000 *per annum.*

Two of the Messrs. Randalls having been present on the occasion of this visit, we have obtained from them some reminiscences worthy of record. The Island, formerly called Montezone, was purchased by this family in 1784, from Col. Ogden, of New-Jersey, for $6,000. It was then in a very neglected state, nearly destitute of trees, fences, &c. The excellent fruit which has been produced here to some extent, has resulted from the labor and enterprise of this family. Peaches were formerly one of the products in great abundance, and of the very best quality; but about forty years ago the crop failed, and the trees gradually decayed, since which very few have been produced on the Island. This was the case, also, in the adjacent country, and was generally attributed to a change in the climate, as no other assignable cause seemed to present itself; the disease called the "yellows," and the peach borer were subsequently found to be the cause.

The Virgalieu pear was produced in great abundance, and perfection, until about twenty years ago, when the crop failed; the trees have since yielded no fruit worth gathering. They put forth their blossoms and foliage in the spring, and appear to be vigorous, but the fruit, after attaining about half its usual size, turns to a dark color, cracks and dries up. Some specimens of it are herewith presented to the club. These trees may be resuscitated by proper culture.

Cherries have been very abundant on the Island; there are several varieties, and the quality excellent; the Blackhearts are most numerous. The celebrated Dyckman cherry, or Black Tartarian, was first grown in America on this Island, about forty years ago. The Newtown pippin flourished on the Island, one thousand barrels of which have been obtained in a season. In all, there are about twenty acres of fruit trees.

In 1820 the receipts for produce, sold off the Island, was $6,000, independent of the supply of the family. The produce sold consist-

ed entirely of fruit, vegetables, and hay. The hay alone, after retaining enough to winter 26 head of cattle, sold for $1,600. In 1839, Mr. Randall sold 14,000 pounds of cherries.

The elder brother, who was present, Mr. John Randall, resided on the Island over fifty years. He states that the family, with the exception of one year, 1824, enjoyed uninterrupted good health. During that year they were afflicted with ordinary bilious fever, of which three members of the family died. Intermittent fevers had not been known to the family during their residence on the Island.

(Signed,) ADONIRAM CHANDLER.
D. JAY BROWNE,
FRANKLIN KNIGHT,
HENRY A. FIELD.

American Institute, N. Y., Sept. 15th, 1846.

REPORT

On David Johnson's field of Corn.

Your committee appointed to view Gen. David Johnson's farm, in Flatbush township, Long Island, beg leave to report that they have attended to the duties assigned them.

They viewed two pieces of corn of five acres each; one piece was tasseled above the ear, the other cut up by the root. The first piece was planted in hills about four and an half feet apart from centre to centre, and about the same between the rows; both pieces were cultivated about the same. In alluding to the mode of cultivation, they would say, that the two first dressings were performed with the cultivator and hoe, the third and fourth dressings by the cultivator.

Your committee are of opinion that the piece cut up by the root would yield the greatest crop; yet we could not decide, as much of the corn had fallen upon the ground, and been removed before our examination commenced. The quantity per acre from present view, we should estimate at eighty bushels, making in both pieces 800 bushels. In the opinion of your committee, the land was capable, from its high state of cultivation, of producing a greater crop by planting closer, and having a less number of stalks in the hill; both pieces were free from weeds, and evinced much skill in the culture. The whole farm consisting of 110 acres under cultivation, was principally in grass, and very judiciously divided into lots of ten acres each. Much attention appears to be paid in cultivating the garden, and arranging the buildings for practical purposes. In examining his barn, which was well stored with grain and hay, we observed a threshing machine, invented by Mr. Pitts, worthy of notice; which happily combines the threshing and cleaning, all at the same time. The arrangement and number of bee hives evinced much skill and attention.

Respectfully submitted by the committee,

(Signed,) MARTIN ELLSWORTH,
N. A. MILES,
S. HARNSBERGER.

New-York, October 17th, 1846.

HORTICULTURAL REPORT

Of the 19th Annual Fair of the American Institute, held at Castle Garden, October, 1846.

To the Managers of the "American Institute," presiding at the Nineteenth Annual Fair, held at Castle Garden, October, 1846.

GENTLEMEN—

Having for five successive years furnished reports to your Institute expressive of the merits of Agricultural and Horticultural Productions exhibited at your Annual Fairs during that period, and having also been selected from the present Agricultural Board to superintend its different branches, I consider it an imperative duty to address you on the present occasion with a view to expatiate on the merits of that cause which you have so long, so ardently, and so manfully sustained.

Your unlimited confidence in an humble tiller of the soil has been more gratifying to me than any compensation you may have tendered in the shape of the "almighty dollar." When I am found undeserving of that confidence, I wish no longer to be retained in your ranks.

In former reports, I have adverted to various subjects connected with the advancement and interests of Agriculture, Horticulture and Arboriculture. They are of such vital importance to the human family, and present such an inexhaustible field to the contemplative mind, as to render any apology unnecessary for still farther dilating on their merits.

In my report of 1841, I observed, that inasmuch as the Fairs of the American Institute are held too late in the autumn for an extensive display of the productions of our gardens, and kept open two or three weeks in succession, a different arrangement is essen-

tial to what is commonly adopted by those Horticultural Societies that do all their business in one day, and confine their premiums to a few of the choicest specimens of such articles as may be offered exclusively for competition.

And as the most essential attractions in the Horticultural department are large displays of the flowers of the season, tastefully arranged, and renewed at least twice in each week, it was recommended that inducements should be offered to all horticulturists and florists, professional and amateur, to furnish daily supplies of the flowers of the season for the decoration of the horticultural room, and thus stimulate their fellow citizens in general to pursue that most healthful and enchanting of all recreations, the cultivation of flowers.

On that occasion I resolved, which resolution I have adhered to ever since, " to preserve inviolate every article to the object to which it was designed, by setting an example of forbearance and self-denial to all connected with the establishment, in not allowing a particle of the articles exhibited to be consumed or taken away until after the Fair is closed, bearing ever in mind that the least deviation from pure rectitude may lead to results discreditable, if not destructive to the Institute." I regret, however, to add, that at the last Annual Fair, notwithstanding all our care and precaution, some of the visitors took liberties with the property of their fellow-citizens. A would-be gentleman was seen breaking the rind of a cheese with the heel of his boot, and serving up the middle to those around him, among whom, I am sorry to add, were several decently dressed females. May this exposure reach their consciences, and convince them of their imprudence.

In my report of 1842, I rendered to the " men of Bergen" all due honor for the cultivation of that fine esculent, the cabbage, at which time we saw upward of six hundred and forty thousand heads growing within a circle of three miles, in the southern part of Bergen township. In dilating on the various kinds of vegetables exhibited in 1843, the pumpkin was included, so esteemed in New England for a thanksgiving pie.

The squash, an excellent substitute for the turnip, which does not succeed well in our hot summers, was also noticed. Vegetable roots for cattle were recommended, as proving valuable nutritious provender for winter consumption. The productions of the American Dairy,

which are now extensively exported to our father-land, and even relished in Cheshire, were, as they deserve to be, warmly extolled. Neither did I forget to remind our fellow citizens of the letter and spirit of republicanism; that the humble tiller who introduces into his kitchen garden, fruits or vegetables of superior excellence, should not suffer the injustice of wealthy proprietors bearing away prizes inconsiderately adjudged for the *bulk* or *quantity* of an article, when its *quality* should have determined the decision. To obviate such an event, my object on the present occasion, while forming the several committees of judges, was, to select men well acquainted with the different subjects upon which they were appointed to pass judgment; men too firm to be biased by adventitious causes, and too honest to be influenced by any pecuniary consideration.

I remarked in my report of 1844, that the cultivation and improvement of the fruits of the earth had been a darling pursuit of the great and the good of every age; that the admiration of plants was common to the whole race of our fellow creatures, their abundance and quality being the principal sustenance of the nations of the earth.

In my report of 1845, I furnished a condensed history of the cultivation of the earth, commencing in the garden of Eden, as recorded in the second chapter of the book of Genesis. The gardens of the Jews, the Egyptians, the Persians and the Greeks, were alluded to, and those of Peru, Holland, Flanders, France and Great Britain, were briefly mentioned. In noticing the latter country, it was stated that the total number of the vegetable species not indigenous to that climate, introduced previous to the accession of George III., was less than 4000, while in the reign of George IV., it amounted to 11,970.

A sketch of the rise and progress of the American Metropolis cannot but prove interesting to the present generation; I have, therefore, collected the following facts from histories of the olden time, and from several of our venerable citizens.

As Castle Garden, the place selected for holding the Nineteenth Annual Fair of the American Institute, has been considered by many a visitor as "quite a journey out of town," I would submit the following interesting reminiscences. The Dutch having obtained permission of the natives, built a fort on Manhattan Island in 1623. This fort stood on what is called the Battery, not far, as is said, from

the Bowling Green. It was a large square, containing several houses, and in 1642, a church edifice was erected in the south-east corner of the fort.

In 1638, tobacco was produced to a considerable extent on New-York island. In 1652, the first public school was established. 1669 the first map of the city was sent to Holland. In 1662, a windmill was erected on the King's Farm, not far from the site of the present City Hotel; at this time some of the high ground opposite, and east of Broadway, was cultivated as gardens. In 1676, a law was passed to pave streets. 1677 there were 12 streets and 384 houses. 1693, a church was built in what was then called "Garden Alley," afterwards "Garden Street," and now Exchange Place, running in the rear of the Merchants' Exchange, thence into Broad-street. The ground here had been laid out and cultivated with much taste; and hence, probably, the name "Garden Alley" was given to the street passing by it. The location of a church here was objected to by some, as being *too far out of town*, but was finally carried; a rare demur, says the writer of the account, in our modern views of distance.

In 1697, the building now known as Trinity Church, was erected; and Smith, in his History of New-York, says, "it was very pleasantly situated on the banks of Hudson's river." The truth is, it was built on the site of the present elegant structure at the head of Wall-street; but in all probability there were no buildings at that time between it and the North River. 1711, a slave market was established in Wall-street. 1718, the Park, called the Commons, was covered with brush and underwood. 1720, a duty of two per cent. was laid on European goods, the first regular tariff mentioned in the early history of the city. 1729, three pence per foot was given for land on the west side of Broadway, near the Battery. 1732, the first stage route was established between New-York and Boston. The coach, which at the present time would be thought an extremely "*slow one*," was fourteen days on the journey, conveying news to and fro once a month! What an amazing contrast to our modern means of communication by electricity and steam!

In 1733, a law was passed to preserve the fish in Fresh Water Pond, (now Centre-street.) 1737, a market house was built in Broadway, opposite Crown, now Liberty-street; at this time the city contained 1416 houses, only sixteen having been built in seven years. 1742, wheat was 3s. 6d. sterling per bushel; the same year, coal

was imported from England, being considered cheaper fuel than wood. 1745, Lady Murray owned the only coach in New-York. 1759, Chatham-street began to be laid out and a few houses to be erected. At this time, land could be purchased at £30 sterling per acre in the outer wards. 1765, ground was obtained by a grant from the corporation, on the corner of Beekman and Nassau-streets, then in the fields, for the erection of the Presbyterian church, in which Dr. Spring now officiates.

When the British evacuated New-York in 1783, the city did not extend beyond Murray-street. In 1791, it was divided into seven wards, and at this time one hundred lots, 25 by 100, situated near the City Hospital, Broadway, were offered for sale at £25 sterling per lot. 1801, Broadway was ordered to be continued through Thomas Randall's land, called the "Sailor's Snug Harbor," near Eighth-street, to meet the Bowery; and the hills levelled and carted into Fresh Water Pond, which at this period was the northern limit of Broadway, and much beyond the settled parts of the city. This pond then drained a surface of nearly 400 acres, and the Indians were accustomed to encamp on its margin during the summer season, employing their time mostly in the manufacture of baskets and other fancy articles, which they offered for sale in the city below. A creek then extended from the pond through Canal-street to the North River, which was crossed in Broadway, now our fashionable thoroughfare, by a dilapidated stone bridge. The island above this was in a rude state of nature; it was diversified by rocky hills, neglected valleys, dangerous quagmires, and barren wastes; creeks ran from the rivers to its very centre. It appeared to be waiting the improvements destined to be made in its aspect by the energetic mind and toiling hands of man.

Previous to the extension of Broadway, as narrated above, the Bowery was the only entrance into our city, and even this was through woods and groves of cedar, leading to the "Bull's Head," where now stands the Bowery theatre. The Horse Market, where many a "gallant steed" was bought and sold, had Chatham Square for its location, which was then surrounded by fields used for the pasturage of cattle. Persons are even now living who fearlessly confess to the guilt of having "*hooked*" apples, cherries and other fruit near what is now designated East-Broadway, and also on the land now occupied as Mulberry, Mott and Bayard-streets, west of the Bowery.

At the commencement of the present century, it was contemplated to build a new City Hall on the Commons before described, which was considered by many old residents as being too distant from the centre of business, the principal portion of the inhabitants then residing below Walker-street.

In attempting to furnish a brief detail of the progress of horticulture, from the period when the "burghers good and true" of New-Amsterdam displayed their skill and taste in the cultivation of that pleasant and fertile little spot, then known as "Garden-Street," or "Garden-Alley"—a spot where now assemble "money-changers" and speculating merchants—I have unavoidably been compelled to digress from my accustomed path; this, however, has been caused by the daily innovations made by "bricks and mortar." Many of our aged citizens hold it in remembrance, that farms, gardens and orchards were cultivated by them in the lower part of the city, and that the estates of Rutger, Willet, Bayard, Delancy, Rivington, Minthorn, Stuyvesant, and other property east of Bowery, together with all the tillable land west of Broadway, were occupied by gardeners and nurserymen, with the exception of Potters' Field, and that required for public burying grounds. Who would now imagine that Cherry-street, running from Pearl-street upward, was once a blooming orchard, where many a smiling damsel picked her cherries, and that in Orchard-street stood goodly apple-trees, where truant urchins stole forbidden fruit?

About fifty years since, a nursery was established near Rivington, east of Sheriff-street, which street derived its name from Mr. Sheriff, the proprietor. Mr. Michael Floy, now living, succeeded Mr. S. in this nursery. He afterward occupied land in Greenwich-lane, and in 1807 removed from thence toward the North River, his nursery being situated between King and Barrow-street, extending across Hudson-street, that beautiful and spacious thoroughfare, to Greenwich-street. This nursery being required for building lots, he was induced in 1820, to start a nursery on the Brevoort estate, immediately north of the Sailor's Snug Harbor, which he carried on until the year 1827, since which time he purchased fourteen acres of land in Harlem, where he at present resides. We thus see that the march of improvement has driven the nurserymen and market-gardeners far from the fields of their early exertions, and that where "once a garden smiled," now stand the mansions of adventurous merchants and successful tradesmen.

Mr. Grant Thorburn, the celebrated seedsman of this city, informs

us, that in the year 1802 "the ladies of New-York were beginning to show their taste for flowers;" and still farther, to quote his language, "In the month of April, 1803, I observed a man for the first time selling flower plants in the Fly Market, which then stood at the foot of Maiden-Lane. As I carelessly passed along, I took a leaf, and rubbing it between my fingers and thumb, asked him what was the name of it; he answered, a geranium. I looked a few minutes at the plant, thought it had a pleasant smell, and would look well if removed into one of my green flower-pots to stand on my counter to draw attention. Next day some one fancied, and purchased plant and pot. I went the following day, when the market was nearly over, judging the man would sell cheaper, rather than have the trouble of carrying them over the river, as he lived at Brooklyn, *and in those days there were neither steam nor horse boats.** Accordingly, I purchased two plants, and having sold them, I began to think that something might be done in this way; so I continued to go at the close of the market, and always bargained for the unsold plants. The man finding me a useful customer, would assist me to carry them home, and show me how to shift the plants out of his pots and put them into green pots, if my customers wished it. The thing being a novelty, began to draw attention; people accompanying their country friends to see the curiosities of the city, would step in to view my plants. In these visits the strangers would express a wish to have some seed; but here lay the difficulty, as no one sold seed in New-York; not one of the farmers or gardeners saved more than what they wanted for their own use, there being no market for an overplus, In this dilemma, I told my situation to the man from whom I had always bought the plants in the Fly Market. He said he was then raising seeds with the intention of selling them with his plants in the market; but if I would take his seed, he would quit the market and stay at home to raise plants and seeds for me to sell in my store. A bargain was struck, I purchased his stock of seed, amounting to fifteen dollars, and thus commenced a business on the 17th of September, 1805, that has been the most extensive of the sort in the United States."

Mr. Wm. Phelan raised plants for Mr. Grant Thorburn on Bishop Moore's estate, bounded by twenty-first and twenty-fourth-streets, and eighth and ninth avenues. I am here constrained to observe, that the reputation of Mr. P. as a skilful gardener stands justly high. He

*In 1809, Robert Fulton received a charter from the corporation to run a steamboat between New-York and Brooklyn, (Fulton ferry.) Horse-boats were, however, used on other ferries within the last twenty years.

has seen numbers of his fellow florists, like the beautiful flowers which demanded their care, "flourish, droop, and die," but he still lives in the enjoyment of a vigorous old age, an ornament to his profession. Mr. P. states that there were but few market gardens above his, south of Dykeman's estate, near King's Bridge, a part of which was then appropriated to the cultivation of vegetables. Most of the garden productions with which the New-York market was then supplied, were raised on our island, with the exception of cabbage from Bergen, green peas, potatoes and melons from Long Island cucumbers from West Chester county.

In the year 1828, the late Mr. William Wilson published a work entitled "*The Economy of the Kitchen Garden, Orchard, and Vinery,*" in which he gave the result of twenty-seven years' experience. In this publication Mr. Wilson disparaged the opinions contained in "*The American Gardener,*" written by the celebrated Cobbett some years previous. In a controversy which was inserted in "*The New-York Farmer and Horticultural Repository,*" he admitted that we had less than twenty varieties of culinary vegetables under cultivation at that time. This "paper war" gave rise to the publication of my "*Young Gardener's Assistant,*" which, from a small pamphlet, has gradually increased to a bulky volume, that has found its way into every section of the Union, and been perused as a text-book by thousands engaged in the pleasurable pursuits of horticulture.

The art of cultivating garden productions is now generally known, and the facilities for their rapid transportation being without a parallel, the markets of New-York are at present supplied with every vegetable that the palate of man could desire. What an amazing change has been effected within the last generation, by the association of intellect in the furtherance of plans for the advancement of superior methods of culture. The scene presented at the Castle Garden during the present anniversary, was one calculated to warm the heart of every patriotic visitor. Here, clothed in modesty and beauty, the rose, the peerless "queen of flowers," charmed the sight, and diffused around its grateful fragrance; here, too, the dahlia, in all the splendor of its matchless hues, elicited admiration from the lover of nature, while the rich products of the garden, the orchard, and the field, evinced the perfection which had been achieved by the gardener and husbandman; here were exhibited the encouraging results of a generous rivalry, the glorious evidences of progressive improvement.

In surveying the fine collection of fruit, I am irresistibly led to dilate on the surprising change which has been effected in its quality by skilful culture. Who, for instance, could imagine that the luscious plum emanated from the austere sloe, or that the delicious pippin apple owes its origin to the worthless acid crab? Or what resemblance can be traced between our famous beurre pears, whose flesh is so succulent, rich, and melting, and that hard, stony and astringent fruit, which even birds and animals refuse to eat? But what cannot the reforming mind of man surmount? See what it has conquered in the cultivation of our native grape, which has been reclaimed from a state of sourness a fox would not covet, to a most delightful flavor, and the generous wine which in due time will be expressed from it, bids fair to stand the test with that imported from abroad. I cannot but introduce here the judges' report of the good qualities of our natives:

Report of Native Wine, tested October 21st, 1846, by Charles H. Hall, William Niblo, and Adoniram Chandler, Committee of Judges on Wine.

The five kinds of wine described below, were sent by Mr. N. Longworth, of Cincinnati, Ohio, to whom a silver cup was awarded.

No. 1. A fine light wine, of delicious flavor, and will compete with foreign sweet wine.

2. A light dry wine from the Catawba Grape; sound, of peculiar flavor, resembling Hock, and of the same Bouquet.

3. A good dry wine, of pure juice, different vintage from the last described, but good sound wine, although not high flavored.

4. A dry wine from the pure juice of the Herbemont Grape. It is sound, of the peculiar flavor of the grape, and in time will, without doubt, be admired.

5. From the Missouri Grape, five per cent. brandy. The wine is thin in body, and wanting in flavor, perhaps arising from our not having had a fair chance of tasting it in perfection, it having been recently shaken up.

A silver medal was awarded for each of the bottles of wine described below:

A bottle of wine furnished by Mr. T. L. Prevost, Greenville,

Greene county, was tested, which was represented to be four years old. "A sort of Hock, of fine flavor, but in a state of fermentation, the sugar not being dissolved and the spirit formed."

A bottle from Mr. Charles Peabody, made by him from a native grape, found on the bank of the Uchee Creek, in Russell county, Alabama, was pronounced by the judges "a pleasant wine, sweet, like Malmsey, and if no sugar had been added to the juice, as is represented, it is remarkable in its character."

From an article in *The Southern Cultivator*, published in Augusta, in March last, it is stated that "the Uchee grape, in its native state, yields but little juice, but that it is extremely rich, and makes a most delicious wine without sugar. The bunches are long, very compact, and of a jet black color." Some of the most celebrated wine connoiseurs of Columbus, describe this wine as having the body of Port, with a little of the Muscat flavor, and equal to the best imported.

On this occasion a bottle of Mr. Pell's Newtown pippin cider was tasted, pronounced as good sound cider, with the flavor of the fruit.

The Horticultural and Agricultural productions described in the subjoined list, were laid before the several committees of judges. Many other articles were exhibited, but as they were not worthy of being brought into competition for the premiums offered, nor of being recorded on the annals of the Institute, they are omitted. Annexed are the names of the judges:

On Flowers.—Ephraim Holbrook, W. S. Carpenter, Aaron Arnold, Noel J. Becar, Peter B. Mead, and John Correga.

On Fruits.—S. Walker, Charles Henry Hall, and Isaac Adriance.

On Vegetables.—Charles Henry Hall, P. B. Mead, and James Henderson.

On Agricultural Productions.—E. H. Kimball, C. H. Hall, and John B. Veeder.

On Dairy Productions.—Thos. Carpenter, Peter Coutant, and Frederick E. Westbrook.

On Flour.—H. Evesson, and Heman Norton.

On Hops.—G. Kitching, and John Tweedle, of the firm of Tweedle & Darlington, hop merchants, Albany.

FLOWERS.

From J. M. Thorburn & Co., No. 15 John-street, a display of about 450 dahlia blooms, frequently renewed during the Fair.

Messrs. Dunlap & Thompson, 635 Broadway, a display of about 300 Dahlia blooms, renewed during the Fair; also two beautiful ornamental designs, 24 of the choicest varieties of Dahlias, and other ornamental plants.

William Kent, Brooklyn, L. I., a large assortment of superior dahlias, frequently renewed, including some extra fine American seedlings.

Charles More, 98th-street, Third avenue, a large assortment of splendid roses and dahlias, also several fine plants and bouquets.

Messrs. Mantel & Lenoir, 46th-street, Bloomingdale-road, a display of about 600 fine fragrant roses, in about 200 varieties; also three splendid bouquets.

Messrs. Boll & Hauser, 50th-street, Bloomingdale-road, a choice assortment of perpetual roses, including about 30 seedlings; also an ornamental design, several choice varieties of dahlias.

Isaac Buchanan, 17th-street, near Fifth avenue, a splendid assortment of roses and dahlias, frequently renewed.

Messrs. Marc & Co., 44th-street, Bloomingdale-road, a fine display of roses and dahlias.

L. Prevost, Astoria, L. I., a large supply of dahlias and other flowers, frequently renewed.

Thomas Hogg & Sons, 71st-street, west of Third avenue, several choice varieties of dahlias and other flowers.

William Phelan & Sons, 5th-street, near avenue A., some fine displays of dahlias and ornamental plants.

J. Briell, Harsimus, N. J., a good assortment of dahlias, frequently renewed.

William Reid, Murray-Hill Nursery, a fine display of choice dahlias.

E. H. Kimball, Flatland, L. I., Bernard Kelly, gardener, two splendid ornamental designs of choice flowers; also several varieties of dahlias.

S. Ruth, gardener to J. C. Beekman, 61st-street, a display of ornamental flowers.

Wm. Davison, Brooklyn, L. I., several fine varieties of dahlias, tastefully displayed.

J. W. Wood, gardener to Mr. Perit, Bloomingdale, two pyramids and several bouquets of choice flowers.

S. M. Cox, 49th-street, Bloomingdale-road, one ornamental design of splendid roses and other flowers.

M. Shones, Bloomingdale, an ornamental design, tastefully arranged.

Miss Sarah Ogden, Newark, N. J., a splendid bouquet of choice flowers.

William Leggett, Bloomingdale, a bouquet of flowers in varieties.

James Robinson, Brooklyn, several varieties of dahlias and other flowers.

J. C. Green, Staten Island, D. Marony, gardener, twelve splendid cockscombs.

T. A. Emmett, Mount Vernon, 59th-street, a fine assortment of dahlias.

Mrs. A. Jackson, Williamsburgh, an ornamental design, and a bouquet of flowers.

Mrs. S. Burtis, Williamsburgh, several varieties of dahlias and other flowers.

James Fairbanks, 14th-street, several specimens of extra fine cockscombs.

John Eltringham, Jersey City, several good varieties of dahlia.

Mrs. Smith, Brooklyn, several varieties of fine flowers.

Miss E. Parkhurst, Newark, N. J., a bouquet of flowers in varieties.

Thomas Dunn, 65th-street, Bloomingdale, 35 seedling dahlias.

R. Ross, Ravenswood, L. I., an assortment of dahlias.

Joseph Job, Bloomingdale, an assortment of flowers, in varieties.

FRUITS OF VARIOUS SPECIES AND VARIETIES.

From Robert L. Pell, Pelham, Ulster county, M. Cunningham, gardener, *Apples* in varieties, viz.; green Newtown pippins, yellow Newtown pippins, Rhode-Island greenings, lady apples, apple quinces. *Grapes*—Black Hamburgh, flame-colored Tokay, white Frontignac, black St. Peter's, royal Muscadine, white sweet-water, white Hamburgh, Catawba, Elsinburgh, Isabella. *Peaches*—Heath freestones, old noblesse, Madeleine de Courson, red rare-ripe, grosse Mignonne, Washington peach, lemon cling, Van Zandt's superb, Malacatune, Pell's seedling, Odel's seedling, Chancellor peach, new noblesse, Malta. Some of the peaches above described were preserved

in fine order in syrup or other liquids. There were also several glass jars of gooseberries, currants, nectarines, apricots, plums, figs, &c., all of the choicest varieties. Also six bottles of delicious cider.

Roswell L. Colt, Patterson, N. J., Nicholas Friche gardener, foreign grapes in varieties, some of which were raised under glass, and some of the best flavored were grown against a board fence in a southern aspect of the garden. The varieties are black Hamburgh, black Damascus, royal Muscat, black Muscadine, West's St. Peter's, white Muscadel, Victoria black Hamburgh, black St. Peter's, black prince, white Syrian, Muscat of Alexandria, white Muscat of Lunel, Miller's Burgundy, white Hamburgh, white Frontignac, white sweet-water, and some others not named. One bunch of the Muscadine represented as growing against a board fence, weighed two pounds, and some of the Victoria black Hamburgh grown in the same manner, were very fine.

Wm. Rankin, Newark, N. J., seven bunches of black Hamburgh grapes, three Muscadine, three of Rose Chasselas, and three of Malvoise.

T. Noise, Stonington, Connecticut, grapes in varieties, viz: black Hamburgh, Muscat of Alexandria, and Muscat of Lunel.

R. T. Underhill, Croton Point, native grapes in varieties, viz: Isabella and Catawba, also some fine apple quinces.

Messrs. Mackintosh & Co., Cleveland, Ohio, 28 varieties of apples, viz: Alexander, cathead, cabbage of Salem, Ohio fall-sweet, fall pippin, fall Harvey, Gravenstein, red winter Calville, Flushing Spitzenberg, western russet. golden russet, seek-no-further, beauty of the west, Baldwin bell-flower, maiden's blush, monstrous pippin, green winter sweet, Newtown pippin, Ortley pippin, Vandevere, Stanley, Rhode Island greening, Pomme de Neige, Hubbardston nonesuch, Esopus Spitzenberg, pumpkin sweet, winter sweeting, and two varieties of quinces.

S. Walker, Roxbury, 97 of the choicest varieties of autumn and winter pears, 54 of which were from his own orchard, and the remainder from his Massachusetts friends. Mr. W. would have been entitled to the silver medal offered for the best and greatest variety of pears, had he entered them for competition. Alpha, Ambrette, Andrews, autumn superb, belle et bonne, belle Lucrative, Beurre d'-Amalis, Beurre d' Aremberg, Beurre d' Anjou, Beurre d' Capiaumont, Beurre Bosc, Beurre Diel, Beurre Duval, Beurre Crappaux, Beurre choir, Beurre Bronzee, Beurre Grise d' Hiver, Nouveau, Beurre Thouin, Easter Beurre, bishop's thumb, black Worcester, Williams' Bon Chretien, Benzi Montague, Bon Chrétien D'Hiver,

Beurre Beaucamps, Bergamot de Suisse, Catillac, Chaumontel, Caen du France, Columbia, Caroline, Columbo 'd Hiver, Doyenne dore, Doyenne blanc, Doyenne gris, Doyenne Boussock, Duchess de Mars, eyewood, Epine Dumas, Flemish beauty, Fulton, Figue, Figue de Naples, Comte de Lamy, Comprette, Crassane, Chelmsford, Comte de Micheaux, Verte long, Franc real d'Hiver, Glout Moreeau, Gratioli, Heathcoate, Jalousie, Johonnot, Josephine, Jaminette, Javerdal, King Edward's Lansac, Louise Bonne de Jersey, Louise de Boloma, Lock's Beurre, Lammas, McLaughlin, Monsieur Cure, Milan Blanc, Napoleon, winter Nelis, ne plus Meuris, Pacquency, parfum d' Hiver, Plumbgastel, Petre, Passe Colmar, Princesse d' Orange, Queen of the Low Countries, Seckel, St. Germaine, Seiulle, Shakespeare, St. Bruno, surpasse Virgouleuse, Sagerity, Thompson, Urbaniste, Whitfield, Van Mons Leon Clere, Verte long d' automne, quillette, moor fowl egg, Rondelet, Messire Jean, Maria Louise, Dix, St. Michael, Aldrich's russet, and Thompson's.

James L. L. F. Warren, Brighton, Massachusetts, 25 varieties of pears, viz: Easter Beurre, Duchess d' Angouleme, Madotte, Buffum, Napoleon, autumn bergamot, Jalousie, Beurre Diel, Francreal d' Hiver, Seckel, Bezi de la Motte, Louise Bonne de Jersey, Verte longue d' automne, Doyenne, Duchess de Mars, swan's egg, Henry IV., Wilkinson, Doyenne d'Hiver, Figue, Bergamotte d' Paques, Catillac, black pear of Worcester, Beurre gris, Duchess de Mars.

Apples.—Baldwin, Hubbardston nonesuch, grand duchess, Porter, bell-flower, Rhode-Island greening, Danver's winter sweet, reinette du Canada, Jonathan, blue pearmain, Roxbury russet, white gilli flower, French russet, striped spice, Pomme d' Appi, princess noble, maiden's blush, Canadian, gloria mundi, minister, sweet russet, old pearmain, Costard, Reinette Franche.

In addition to the above, one case of wax imitation fruit was exhibited, consisting of 110 varieties of different species, which were considered good imitations. Fac-similes are prepared by Mr. Warren's daughter, who is now thirteen years of age. She was self-taught in the art from specimens of fruit grown in the garden at Monantum Vale, Brighton, Massachusetts.

Harman Wendell, Albany, 8 varieties of pears, viz: Beurre Diel, white Doyenne, Marie Louise, eastern Beurre, and 4 varieties not named.

H. W. Edwards, New-Haven, Connecticut, 14 varieties of seedling pears.

John Brewster, English Neighborhood, N. J., 6 varieties of apples.

Samuel C. Mott, Jamaica, L. I., 5 varieties of apples, and 1 of plums.

Messrs. Parsons & Co., Commercial Garden, Flushing, 4 varieties of grapes, and 3 vines in pots.

H. Steel, Jersey City, several bunches of Isabella grapes, exhibited on the vine.

C. M. Graham, Content, Harlem Lane, a basket of fine Isabella grapes.

William Shultz, 278 Washington-street, a barrel of golden pippin apples.

Charles More, 98th-street, Third avenue, 3 varieties of apples, 4 do. of peaches, 2 do. of pears, and 1 plate of medlars.

S. T. Jones, Brighton, S. I., James Kennedy, gardener, 1 French dwarf apple tree in fruit, 2 varieties of peaches, 7 quinces, and a dish of strawberries.

Isaac Pullen, Highstown, N. J., 12 varieties of apples, 3 do. of peaches.

Michael Roe, Newark, N. J., 3 varieties of apples.

James Ewbank, Flushing, about 70 bunches of Isabella grapes on the vine.

E. Classon, 219 Rivington-street, 15 nectarines, and 3 varieties of grapes.

Isaac Hyler, Kingston, N. Y., 2 varieties of pears.

A. Coe, Newark, N. J., 2 seedling clingstone peaches, and a basket of grapes.

John F. Pond, Worcester, Massachusetts, 6 pear-quinces and 7 apple-quinces.

O. Smith, Monroe, Orange county, N. Y., 15 quinces, and 3 varieties of apples.

D. Fairbanks, 237 14th-street, a dish of seedling peaches.

Isaac Q. Underhill, N. J., 12 fine apple quinces.

James M. Pullen, Centreville, N. Y., a basket of white clingstone peaches.

A. R. Leggett, No. 26 West Washington-Place, a stand of fine Isabella grapes.

James G. Carpenter, Newark, N. J., 12 fine apple quinces.

G. Beadle, Fishkill, N. Y., 1 dish of frost plums.

E. Simmons, Worcester, Massachusetts, a dish of nectarines.

J. B. Haff, Bloomingdale, 1 jar of black sweet-water grapes.

R. Corey, Hudson, N. Y., 12 fine harts apples.

Wm. Plume, Newark, N. J., a small branch containing 36 Ringgold pears.

David Johnson, Flatbush, L. I., 2 varieties of apples.

Henry and George Litchfield, N. J., each a basket of peaches.

A. Pabor, Harlem, 1 dozen of large fall pippin apples.

A basket of grapes was exhibited by each of the following gentlemen: Mathew Antonides, 168 Prospect-street, Brooklyn; W. Hart, Brooklyn; John Barker, Factorville, N. J.; John B. Galliard & Son, 66th-street; Abram Mockbridge, Newark, N. J.; Warren P. Alden, 41 Washington Place; Abram Parker, Plainfield, N. J.; James Bruff, 106 Essex-street, N. Y.; Aaron Gomez, Bull's Ferry; E. H. Kimball, Flatlands, L. I.; L. K. Smith, 188 Henry-street.

CULINARY VEGETABLES.

R. L. Pell, Pelham, Ulster county, M. Cunningham, gardener, 12 blood beets, 12 turnip-beets, 12 table carrots, 12 table parsnips, 12 roots of salsify, 12 roots white celery, 8 egg plants, 3 varieties of radishes, 1 bunch of leeks, 4 heads of cabbage in varieties, 1 peck of potato onions, 1 peck of silver skin onions, 1 peck of red onions, 1 peck of Russia turnips, 1 peck of red top turnips, 1 peck of Mercer potatoes, 1 peck of Pelham pink-eye potatoes, half a peck of shelled Lima beans, half a peck of red tomatoes, half a peck of fig tomatoes, 1 bunch of martynia, half a dozen monkey bread fruit, 3 varieties of the squash.

As the above varieties contained the largest assortment of culinary vegetables, and entitled to the silver medal offered, the following were placed in competition for other premiums, viz: 3 large pumpkins, 4 fine varieties of the squash, 12 roots of red celery, 1 peck of yellow stone turnips, 1 peck of Norfolk turnips, 1 peck of potatoes, for cattle, 12 white carrots, 12 parsnips, 12 mangel wurtzel beets, 12 sugar beets. Among Mr. Pell's potatoes was one variety which yielded 600 bushels to the acre, and from another variety named Pelham pink-eye, 3 bushels and 12 potatoes were raised from two-thirds of one potato, received from the American Institute, and brought from lake Superior.

J. C. Beekman, 61st-street, S. Ruth, gardener, 12 large sugar-beets, 12 mangel wurtzel beets, 12 large blood beets, 12 large cattle parsnips, 12 Guernsey parsnips, 12 table parsnips, some large Russia turnips, and long white turnips, 2 cattle pumpkins, 6 heads of cape broccoli, 12 table turnips, 1 peck of red onions, 1 peck silver skin onions, several fine squashes, a dozen egg plants, 1 bushel of sweet potatoes, 2 varieties of carrots, 1 bunch of artichokes, 1 bunch of okra, one bunch of gherkin, one bunch of beans, 1 bunch of peas, 10 stalks of corn in several garden varieties.

E. H. Kimball, Flatlands, L. I., Bernard Kelly, gardener, 25 extra large blood beets, 12 large turnip-rooted blood beets, 12 heads of drumhead cabbage, 12 heads of large Savoy cabbage, 12 red pickling cabbage, 12 orange carrots, 12 white cattle carrots, 1 peck of potatoes, 12 parsnips, 2 varieties of turnips, a bushel of each, 6 heads of cape broccoli, 3 varieties of onions, a peck of each, 2 varieties of egg plants, 1 bunch of birdseed.

Deaf and Dumb Asylum, Garret Mead, gardener, 12 blood beets, 12 mangel wurtzel beets, 12 egg plants, 4 crooked necked squashes, 12 red peppers, 3 ears of garden corn.

Roswell L. Colt, Paterson, N. J., Nicholas Friche, gardener; 1 peck of Mercer potatoes, 1 peck of cattle potatoes, 1 dozen cattle parsnips, 1 dozen sugar beets, 1 dozen orange carrots, 1 dozen cattle carrots, 1 dozen Russia turnips, 1 dozen mangel wurtzel beets, 12 salsify roots.

Joseph Clowes, Harsimus, N. J., 12 roots of white solid celery.

Charles Hubbard, Middletown, Conn., 1 peck of best table potatoes.

E. H. Townsend, Newtown, L. I., 2 varieties of excellent potatoes, 1 peck each.

Peter Wyckoff, Bushwick, L. I., 3 fine table cheese pumpkins, and some white turnips.

James L. Moore, Newburgh, N. Y., one large pumpkin, 135 lbs.

Jacob Menea, Staten Island, 2 extra large pumpkins.

Wm. J. Townsend, Astoria, 2 varieties of red tomatoes.

A. M. Baker, Elizabethtown, N J., 1 peck of Mercer potatoes.

W. B. Oddie, Rockland co., 1 peck of early peeper potatoes.

James B. Calyer, Bushwick, L. I., 3 crooknecked pumpkins.

Philip Augustus, Bushwick, L. I., 6 blood beets, and 6 yellow turnips.

David Johnson, Flatbush, L. I., 3 varieties of potatoes, and 6 egg plants.

Wm. Phelan & Sons, Fifth-street, near Avenue A., about 40 white egg plants.

Colored Orphan Asylum, 6 roots of celery, 4 egg plants, 10 sugar beets, some white onions, kale, &c.

M. S. Brown, Astoria, 1 peck of white onions, and 12 Savoy cabbages.

John H. Johnson, Staten Island, 6 purple egg plants.

A. P. Cummings, Williamsburgh, L. I., 2 large pumpkins, and a serpent cucumber.

O. Ruth, Camptown, N. J., 12 blood beets, and 6 parsnips.

Rishton R. Baily, Communipaw, N. J., 12 roots of white solid celery.

Thomas Ash, Throg's Neck, 6 purple egg plants.

J. J. Varian, 27th-street, 6th Avenue, 1 bushel of Mercer potatoes, also garden corn and egg plants.

G. Pearsall, Virginia, 1 peck of large Carolina potatoes.

Caleb S. Merrit, 169 Spring-street, 1 pumpkin, 120 lbs.

L. Amoureux, 114 Ludlow-street, 1 plant of the tannier (arum esculentum.)

AGRICULTURAL PRODUCTIONS.

R. L. Pell, Pelham, Ulster co., 1 bushel white flint wheat, 1 bushel of rye, 2 bushels of oats, 1 bushel of buckwheat, 1 bushel of barley, 25 varieties of fancy corn.

D. S. Mills, Newtown, L. I., 1 bushel of Mediterranean wheat; 100 ears yellow corn, 50 ears of red cob, 60 ears of white dented, 40 ears of white cob, and a keg of sweet corn.

A. Haring, Harington, N. J., 1 bushel of white flint wheat.

James Weeden, Newtown, L. I., 1 bushel of Mediterranean wheat, and 1 bushel of rye.

Doctor Henry A. Field, from his farm at Poughkeepsie, 1 bushel of rye.

W. J. Townsend, Astoria, 75 ears of early Dutton corn, 45 white flint, 75 early Canada, 40 sweet corn, and 50 ears in eight other varieties, also some Egyptian corn.

J. H. Coggeshall, Lynn, Massachusetts, 140 ears of corn in six fine varieties.

S. T. Jones, New Brighton, S. I., 1 bushel of oats and 40 ears of white flint corn.

David Johnson, Flatbush, L. I., 1 bushel of white flint wheat, and 70 ears of corn in six varieties.

Roswell Colt, Patterson, N. J., 1 bushel of white flint wheat, and 120 ears of corn in three varieties.

Peter Wyckoff, Bushwick, L. I., 140 ears of corn in four choice varieties, of 8 and 12 rowed.

Almond D. Fisk, Newtown, L. I., five varieties of Indian corn.

M. O. Rourke, N. J., 45 ears of yellow, and 12 of Barbadoes corn.

S. B. Townsend, Newtown, L. I., 1 bushel of Virginian white wheat, and 40 ears of white corn.

Charles Hubbard, Middletown, Conn., 40 ears of fine 12 rowed yellow corn.

Thomas Ash, Throg's Neck, 40 ears of long white corn.

E. H. Kimball, Flatland, L. I., 1 bushel of fine Bergen wheat.

G. D. Pitkin, Woodville, L. I., 40 ears, and 5 stalks of corn.

Robert Young, Flushing, 40 ears of Rocky Mountain corn.

J. Bergen, Jr., Gowanus, L. I., 1 bushel of Bergen wheat.

Elisha Carpenter, West Chester, 8 stalks of Egyptian corn.

PRODUCTIONS OF THE DAIRY.

H. Burrell & Co., 15 Front-street, 2 excellent cheeses.

R. Plumer, No. 3 Front-street, 2 cases of fine flavored cheese.

Samuel Perry, No. 3 Front-street, 2 boxes of superior pine-apple cheese.

Messrs. Ward & Cady, 207 Washington-street, 2 choice imitation English cheeses.

J. C. Butts, 261 Washington-street, 1 fine flavored cheese.

Jonas Leach, Norwich, Chenango co., a case of good pine-apple cheese.

Phineas North, Goshen, Connecticut, Hyslop & Coffin, 43 Front-street, agents, a case of cheese.

R. C. Nodine, 116 Warren-street, 4 cases of cheese.

Daniel Fish, Hursburg, Messrs. Ferguson & Sherman, agents, 2 large cheeses.

P. W. Stebbens, 15 Front-street, 1 case of cheese.

Messrs. Shulty & Griffin, 261 Washington-street, 1 case of cheese.

Messrs. Southworth, Litchfield & Beach, 31 Water-street, 1 box of cheese.

John Thew, Orange co., a pail of very superior butter.

D. T. Rogers, Newburgh, Orange co., a pot and box of excellent butter.

Martin L. Thompson, Orange co., 1 pail of fine flavored butter.

Silas & A. Vail, Orange co., each a pail of good butter.

Josiah Hubbard, Middletown, Conn., 1 pail of butter.

FLOUR.

Two barrels of excellent flour, branded Whitney, Rochester, from James M. Hoyt & Son, 17 Washington-street.

One barrel of superfine flour, branded City Akron, from Charles W. Woolf, 31 Moore-street.

One barrel of fine flour, from R. L. Pell, Pelham, Ulster co.

A barrel of flour was also exhibited from each of the following agents in South-street: Morgan & Co., John N. Beach, Leland, Adams & Co., Herrick & Van Boskerk, and Clarke & Coleman.

HOPS.

One bale of superior hops, from Ezra Leeland, Morrisville, Madison county.

In resigning the trust confided to me, I would fain place on record some of the results of six years' experience in the management of the Horticultural Department of your Institute. I humbly flatter myself that in strenuously endeavoring to render the field a fair and open one to all competitors, and in an inflexible adherence to the motto which I at first adopted, that of "*equal justice to all*," confidence has been established in the minds of those connected with this Association. I have neither accepted nor granted the least favor whatever beyond the strict rules of courtesy, nor have I compromised one principle adopted for the governance of my conduct, being determined never to swerve from what I conceive to be a correct course. Let me not be deemed egotistical in these remarks; I have but stated the *simple truth*, actuated by a sincere desire to establish pure republican principles as the rule of conduct for those who may succeed me in the office at your future anniversaries.

In the rapid survey I have taken of the onward march of improvement, which has rendered the city of New-York the emporium of the New World, I am aware that many omissions will meet the eye of the vigilant, though I hope indulgent, critic. One pleasing feature stands prominent in the sketch I have given; the spirit of intelligence and improvement, ever active and persevering when protected by free and liberal institutions. Were not its workings convincingly demonstrated at this Anniversary? The importance of *Agriculture*, the sure and firm foundation of true national greatness, was forcibly impressed upon the public mind, and the results of successful husbandry rewarded by appropriate premiums; while all the

Arts conducive to the comforts and embellishments of life received the encouragement originally designed by the projectors of the American Institute.

When viewing the animated and beautiful scene presented at our late Annual Fair, held in a place where "armed men once prepared to do battle," I was cheered by the hope that the day was not far distant, when every *Fort* would be dismantled, and the *fruits of peace* and good will spread their benign influence through the world, raising the great human family to the highest standard of excellence; when every man, reposing under the branches of his own vine, would experience all the felicity which this earth is destined to afford.

All which is respectfully submitted by your faithful friend.

THOMAS BRIDGEMAN.

New-York, October 30*th*, 1846.

STATEMENTS

Of Exhibitors at the Nineteenth Annual Fair, 1846.

IMPROVED STOCK.

Paterson, N. J., Nov. 20th, 1846.

Dear Sir:—My manner of raising improved stock is as follows: I first purchase the pure breed, at a cost of one hundred dollars for a bull calf of four months, and one hundred dollars for a cow with calf, that is for my pure Devons; I feed them as much as they will eat, generally soiled fed.

I only let my calves suck their mothers for three days: I then wean them and bring them up by hand; if weaned thus early there is no difficulty in learning them to drink. I then boil skim milk, add some Indian meal, and about a wine glass of molasses per day to this drink, on which they thrive famously. It is too expensive to raise calves on new milk. When a month old, if in the spring, I cut for them clover, lucerne, rye grass, or rye, (say rye first); by way of change, I occasionally mix some oil cake, or flax seed, instead of Indian meal, with the boiled milk; in the fall of the year I give the calves roots, cut hay and meal, after a month or six weeks. They have a grass plot of about an acre to run in, where there is abundance of water; in this way I raise my calves at small expense. Profit, there is none. The bull I gave $100 for, I have offered to sell at $50; a bull calf that took the last premium, at $50, and have given away four pure bull calves.

I may say the same of the Alderneys. I have not been able to sell a bull calf, have given away five. As to Ayrshires, one of my cows cost the importer sixty guineas. I will sell her for fifty dollars. My imported bull cost me upwards of three hundred dollars, I will sell him next June for one hundred and fifty dollars. My fine bull calf from my imported Ayrshire cow, (the same stood me in two

hundred dollars,) I would sell for fifty dollars to any one in the neighborhood, reserving the use of him for four cows in 1848, and four in 1849, or for one hundred dollars and to then remove him without reserve use to me. I say that it is in vain to import cattle for profit.

Yours,

ROSWELL L. COLT.

T. B. WAKEMAN, Esq.

AYRSHIRE COWS.

New-Windsor, Orange Co., Nov. 27th, 1846.

The cow which was exhibited by me at the late Fair of the American Institute, was selected from one of the best dairies in Ayrshire, by Mr. David Campbell, factor to Mr. Oswald, near the city of Ayr, as one of the best in his neighborhood, and had a most excellent character. I applied for a pedigree, but was informed that the farmers in that section of the county keep no pedigrees, nor do I believe any are kept in the county of Ayr, although I notice they are given.

She is an excellent and rich milker, giving, in her best time, upwards of 28 quarts per day, fed on good pasture; is an easy keeper, hardy, very gentle both in the field and stable. In my opinion they are better adapted for our climate than any other breed; and I am now endeavoring to get a dairy of as full blood stock as possible. It has been suggested, and I approve of it, that the best way is to import calves or yearlings of this breed, so that they would be acclimated before coming into the dairy. Bull calves are worth from 25 to 35 dollars; heifers, from 23 to 26 dollars; the freight would be from 20 to 26 dollars apiece. A good five year old cow is worth in Ayrshire, from 90 to 110 dollars, to select.

Yours with respect,

THOS. ELLISON.

WORKING OXEN.

Middletown, Middlesex Co., Conn., Nov. 16th, 1846.

In reply to the enquiries contained in your circular, in relation to the working oxen exhibited by me, at the Nineteenth Annual Fair

of the American Institute, and which received the first premium, I will briefly state the following particulars.

They are of our native breed, slightly mixed with Devonshire, which mixture produces the fine red color, which is greatly preferred by us, to any other, for working oxen. Their feed has been uniformly, little else than hay and grass; either of which they have seldom refused, if tolerably good. Always have been remarkably healthy cattle.

They were put to the yoke when quite young, to which they soon became submissive, and have ever since remained orderly, gentle and kind; owing probably to the kind treatment they have received from the hands of their driver, the lash seldom having been applied to them with severity. When yoked and attached to an ox cart, and the driver in the same, by speaking sharply to them, they may at once be set into a brisk trot; after which, at a single word of command mildly spoken, they will at once stop and become quiet. They were six years old last spring.

Great pains are taken by the farmers of this county to match their steers; it is generally done when they are one, two and three years old; when matching, we take into consideration the size, color, disposition, &c. We sometimes yoke our steers when they are one year old, and those brought under subjection thus early become altogether the most docile.

With best wishes for the prosperity of your Institute,

I am respectfully yours,

CURTIS BACON.

WORKING OXEN.

Astoria, Nov., 16th, 1846.

T. B. WAKEMAN, Esq :—In answer to the circular addressed to exhibitors at the last Fair by the Institute, I would submit the following in reference to my oxen.

They were raised and broken in Connecticut, and are of the Devon breed. I use them for all farming purposes. In the summer they feed in pasture, in winter I give them corn stalks, with a little

clover hay or roots. They have not eaten five hundred weight of meal in their lives.

I stable them the year round at night, and during stormy weather.

Respectfully yours,

W. I. TOWNSEND.

WORKING OXEN.

The working oxen exhibited by me at the Cattle Show, were a cross of the Devon and native stock, five years old; during the summer they are fed in pasture, in the winter they are stabled and fed on corn stalks and salt hay, with a peck of brewer's grains per day each. They are used at all kinds of farming work, and considerably on the road.

MULES.

My mules are kept in the stable most part of the year. I use them constantly in winter and summer, at work of all kinds. In spring and summer they are worked hard for farming purposes, and in fall and winter, kept constantly on the road, drawing feed from New-York. I feed them upon English hay and cut feed in summer, and salt hay with cut feed in winter; never stinted in quantity.

Respectfully yours,

DAVID P. MILLS.

Newtown, L. I., Nov., 1846.

FAT OXEN.

Milford, Conn., Nov. 20th, 1846.

Sir:—Your notice of a premium awarded me for the best fat oxen, has been received.

My oxen were four years old in April, 1846. They are a cross of the native and Devonshire breed; about three-fourths native and one-fourth Devon.

I commenced fattening them when three years and ten months old. They were fattened almost wholly on grass, except being fed on

meal, about four quarts each for two months previous to being turned out to pasture, 1st of June, 1846.

Very respectfully.
SELAH STRONG.

T. B. WAKEMAN, Esq.

SAXONY SHEEP.

North Salem, Dec. 6th, 1846.

The sheep exhibited by me at the Cattle Show of the American Institute, were of the Saxony breed, taken from some of the best flocks I could find. As I have just commenced the business, I have not yet had time to raise and improve them.

I feed my sheep altogether on grass and hay, except my ewes just before lambing; I then feed them a little grain, either corn or oats. I let them run out to the stack, except in bad storms, when I am careful to provide shelter for them.

Your ob't servant,
HIRAM WHITLOCK.

THE EAST BROOKLYN OX.

This fine animal, now weighing over 4,000 pounds, was bred by Mr. Charles Wilson, Distiller at the Wallabout, and is a fair proof that the mode of feeding adopted by him, will produce the results he anticipated.

Mr. Wilson, distils whiskey from rye and corn together, and the returns of the still, under the name of swill, is sold to milkmen. The nutriment contained in this swill arises from a portion of the saccharine and starch not being converted into alcohol, and as these two articles are the only nutritious properties of vegetables, it is found to be to a sufficient extent a nutritious food for milch cows.

Mr. Wilson, from his familiarity with the general principles of fermentation, conceived the idea, that if a portion of shorts were added to this swill, and then permitting the mass to pass slightly into the acetous fermentation before feeding it to the animal, that

the starch would thereby be partly converted into sugar, and that the sugar itself would not materially lose its nutritive properties, thus rendering the whole capable of entire and easy digestion. The results fully prove that Mr. Wilson's rationale is correct, and is equally creditable to him, with his readiness to communicate his recipe.

It has long been known that many kinds of food are more easily digested when boiled, than in the raw state, and the experiment of Mr. Wilson would suggest the propriety of slightly souring the food by slight fermentation, after the cooking, before feeding.

Brooklyn, Dec., 1846.

MATCHED HORSES.

New-York, Nov. 18th, 1846.

T. B. WAKEMAN, Esq.:

SIR:—In reply to the questions contained in the circular to exhibitors, at the Nineteenth Annual Fair of the American Institute, I submit the following:

The first premium of a silver cup was awarded to my pair of matched horses, six and seven years old.

They were sired by a horse called "Black River Messenger," a son or grandson of the celebrated imported horse Messenger, whose stock, either for the turf or the road, has never been excelled. Their dams without being thorough bred, boast a strain of "gentle blood."

My mode of feeding is this: I give them eight quarts of oats per day, with four quarts of shorts at night, and a light handful of hay; I give them hay but once in 24 hours, and that at night.

Besides carefully grooming them, they are exercised daily, rain or shine, and their legs washed in cold water. In driving them on the road, I always give them fast work, not less than 14 or 15 miles an hour. They can trot in double harness, a mile in three minutes, and can go 17 miles in an hour, without injury. They are six and seven years old, 15 hands 3 inches high, and either of them singly can trot a mile in two minutes and fifty seconds any day in the week. They cost me $1,300, but a much larger sum has been refused for them.

Your ob't servant,

WILLARD S. REED.

SHEPHERD DOGS AND POULTRY.

New-York, Dec. 1846.

Sir:—I received a circular a few days since, notifying me that I was awarded at the late Annual Fair of the Institute, with three copies of agricultural books, for my exhibition of a dog and poultry, and also, a silver medal for the best specimen of Rye. You request a statement of the peculiarities of the different breeds, and the quality of the soil, mode of culture, &c., of the rye.

The dog was a Scotch shepherd dog. These dogs, I consider, the most valuable breed that we are acquainted with, for the farm, unless they are required for the churn, for which purpose they would be found rather too small. With little training they can be taught to drive cattle and sheep, which appears to be to them a delightful employment. They will remain faithful to their duty at all times, until their feet are cut and almost worn to the bone. They will seldom bear whipping, but if well treated by their owners, will be their constant companions about the farm, always ready to do their bidding. The mother of my slut was perhaps the best broke dog we have ever had in this country. She was used at the upper Bulls Head, where she was employed daily to drive droves of cattle from the pasture grounds near the city, to the pens where they were exposed for sale; and then to drive such as remained unsold to their pasturage again in the evening, which she would do with the direction of a single individual on horseback, whose commands she obeyed with great alacrity. She would also drive large droves of sheep from the country to market, keeping them all together both day and night, exercising at all times the greatest vigilance over them, and becoming so well acquainted with each individual sheep as to be able to separate him from any other flock. These dogs are peculiarly valuable to the western farmer, who feeds his flocks upon the prairies. I have sent four of my slut's pups for such purpose to Wisconsin and one to Illinois.

The *geese* which I exhibited were of an unknown breed; for the want of another name, I called them the Dutchess breed. They somewhat resemble the Poland. They are larger than the Bremen geese, small boned, and very fine when well fatted and killed young. The smallest goose we had weighed thirteen pounds alive. I had a gosling of this season, for my table, which weighed, dressed, sixteen pounds.

The *fowls* were Dorking. I obtained the stock from Mr. L. H. Allen, of Black Rock. They were imported by his brother, Mr. A. B. Allen, of this city. These fowls are larger than medium size, very fine in their bodies, small boned, and their flesh considered a great delicacy. Their plumage is beautifully variegated. I have no black or white fowls. They have flesh colored legs and generally five toes, although this is not a certain characteristic. I have none with a top knot, with black or yellow legs. They are good layers, steady setters, and the best of nurses for their broods. These fowls are the Capon fowl, of England, and where known, are more highly valued than any other breed.

In keeping fowls, I have found that it is best to feed them well both summer and winter. They should have animal food, as well as grain, during the winter months. I have used the scraps left after pressing out the tallow of beef fat, with much advantage. It will keep all winter, and if left where the fowls can get it, they will show their fondness for it by picking at it almost constantly. They should have a dry roosting place, which should be frequently white-washed, and the floor covered constantly with some earth combined with plaster of Paris, or charcoal dust, which will preserve all their manure and fix those gases which always arise from its decomposition, and which frequently causes disease and inflammation of the eyes.

Rye. There was nothing peculiar in the soil, seed, or mode of culture of the rye. The only reason I can give for its quality was, that the land had been well manured for two years previously for other crops. The manure employed, was a compost of muck and lime, applied liberally in the spring for a crop of oats. The next season it was again manured on its poorest portions, with compost; planted in corn, which was manured in the hill with a variety of highly concentrated composts and some guano. The corn was cut up in September and removed from the field, and the rye was sown about the second week of October In harvesting the crop, it was cut early while much of the grain was still in the milk, which prevented it from shaking out before threshing, besides improving its quality and appearance.

With much respect, yours, &c.,

HENRY A. FIELD.

T. B. Wakeman.

FARMING.

I began in 1828 to get my farm in order. At that time there was but little fence on it, that deserved the name, and many of the ditches had become stopped, and the low ground rendered wet and of little value. At that time the farm had about twenty head of cattle on it, and we had to buy hay almost every year. For three years I did little but make fences and ditches, and seed some meadow. In 1831 I began to garden on a small scale, and continued making fence. In 1832 and '33, rebuilt the barns, which had fallen to decay; and in '34 or '35, began to sell milk on the place to milkmen from the city, who came for it; finding great difficulty in getting the pay from them, I began on the first of April, 1837, to send the milk to private houses in the city, myself. At first we sold only about twenty quarts per day, in that way, and had to dispose of the rest to other milkmen, who all predicted that I should fail of getting customers enough to pay, and would give up in disgust before the year went by. Many of my friends were of the same opinion, but I was sure that I was right, and went ahead, and time solved the problem. In October, 1837, I had more customers than could be served by one wagon, and I had to start a second. In May, 1838, two were not enough, and we had to get a stable in New-York to keep the horses and wagons that served the milk, and send it down in a large wagon. That fall we had four wagons on the road, and the next summer five; and in 1840, it took six wagons to do the business, from which time to the present, we have not tried to enlarge the concern, as I am contented with it as it is. My policy has been, to furnish as good an article as can be produced, and at a fair price. At times persons have started up, thinking to make a fortune by the quality they sold, and have offered to serve my customers at a less price. I have never fixed the price at less than 6d. per quart, and have always found that those who undertook to serve at four cents per quart, either stopped soon or the customers who had left me to take of them, came back again, which I suppose they would not have done, unless they found my milk better and cheaper at 6d. per quart, than others at 4 cents. In 1837, I also began to enlarge the garden, which now covers about 80 acres. I have by my experience come to the following conclusions:

First. That money can be made by farming, if properly attended to.

Second. It can only be profitable by doing well what you undertake; for one acre well worked and manured, will yield more than ten acres cultivated as we some times see done.

Third. That the gains of farming are smaller, but more sure than those of most other kinds of business.

Fourth. That the farming interest, for its full development, requires an agricultural school to be established in the vicinity of New-York, and other large cities, where boys can be taught the best modes of performing work, and necessary chemical science; for without such knowledge they will, nineteen times out of twenty, lose money by their first trials in farming, and soon perhaps get tired, give up, and say, that there is not a chance of a man's making any thing by a farm.

GOUVERNEUR MORRIS.

CULTURE OF CORN.

The soil upon which the corn was grown was a gravelly loam. The previous crop was hay on sod ground. The land was plowed, rolled heavily, and then harrowed and cross harrowed; furrowed 3 feet 8 inches apart each way, manured with equal parts lime and pond muck, about three pints to each hill. Planted the seed in May after the 10th, with no preparation, and dropped without being soaked. Dropped four grains to the hill, which was about one bushel of corn to five acres of land; the product from 22 acres, harvested as follows: from 11 acres planted as above with eight rowed white flint corn, 1,250 bushels of ears. From five and a half acres planted with lime and muck, eight rowed yellow flint corn, 850 bushels of ears. From five and a half acres planted upon ground bones (about one pint to the hill,) eight rowed yellow flint corn, 950 bushels of ears.

The crop was gathered in November. Two fields were husked entirely from the hill. (One five and a half field had been topped early in the summer, which materially injured the yield,) the other was cut up in September from the bottom, and stacked in small shooks, thereby improving the stocks for winter fodder, and not injuring the grain.

DAVID S. MILLS.

CORN.

In 1844 the ground was manured with common barn-yard manure. In 1845 not improved. On the 18th and 19th of May, 1846, the ground was plowed and a small growth of clover turned under, harrowed, and levelled down; furrowed on the 20th both ways, from north to south about three feet apart, and from east to west about two feet apart. At this time the ground was so wet as to be unfit to work.

Planted on the 28th with the eight rowed yellow corn, common feed corn; the seed was soaked in a weak alkali about 24 hours, then planted and covered as usual. As soon as the corn was up, the weeds and grass were so prolific as to almost hide the young plants, and to obviate it the farmer went through the corn with hoes, afterwards the plow was run through it, turning the furrow from the hills and forming a centre mound. A week afterwards again plowed the other way, that is, crosswise, following with the hoes to destroy all the weeds, and loosen the baked and hardened soil.

When the corn was two feet high, plowed the third time, furrow turned to the hill and adding to the support of the corn; no other treatment excepting the occasional use of the hoe in keeping down the weeds. From a *short* acre and a half, 315 bushels of large and handsome ears of corn have been gathered.

M. G. LEONARD.

POTATOES.

Effenveldt, Rockland co., Nov. 14, 1846.

T. B. WAKEMAN, Esq.:—The potatoes for which I obtained a premium at the last Fair of the Institute were cultivated as follows:

The soil upon which they were raised is a rich clay loam, particularly adapted to the peach. I gave it a good fall plowing, and in the spring plowed twice, harrowing and rolling each time, putting on at the rate of fifteen loads of compost to the acre, (hay manure, muck, and lime well incorporated.) The previous crop was potatoes.

The yield per acre was small, as the ground is already occupied as a peach orchard; 124 bushels was all that was obtained from one

acre. The crop was not in the least affected by the disease, and I attribute this to the use of refuse salt from the packing houses, put on as a top dressing, at the rate of six bushels to the acre, after putting about a quart around every peach tree.

WM. B. ODDIE.

HOPS.

Morrisville, November 17th, 1846.

T. B. WAKEMAN, Esq.,

DEAR SIR:—I received yours of the 1st, and in reply would say, that the expense of raising and delivering hops of the quality of those I sent to the Fair at Castle Garden in October last, is as follows:

Rent of one acre of land,	$10 00
" " poles,	28 00
Cultivating the land,	45 00
Barn-yard manure,	10 00
Harvesting, drying, bagging, and transporting to New-York,	82 50
Profit,	34 50
	$210 00

Raised on the above acre 1,500 pounds, and sold Wm. B. & A. Mills for 14 cents per pound, ---------- $210 00

The above acre of land is a dark loam, and plowed in spring of 1845, and 35 loads of manure were spread on, plowed in, dragged and planted to corn and hops; and last spring the poles were set, the hops were planted and hoed three times during the past season.

Yours truly,

EZRA LELAND.

GEORGIA ARROW-ROOT AND STARCH.

St. Marys, Geo., September 15th, 1846.

DEAR SIR:—I beg leave to forward to you for exhibition at the next Annual Fair of the American Institute, a sample of Arrow-root, which I request you to exhibit under the name of "Georgia

arrow-root" or "Georgia, Bermuda arrow-root," at your option. The article is manufactured by me, and is made from *precisely* the same root as *that* from Bermuda and the other West India Islands, (but more generally and favorably known as Bermuda,) viz., the "*Masanta Arundinacea*," for a full description of which, I beg to refer you to Dr. Ure's Dictionary of Arts, &c., and the supplement to the same. I have been particular in requesting that it may be exhibited under one of the above names; as I find that the potato starch (so extensively made in Boston and vicinity,) wheat starch, and various others, are known generally as "*American Arrow-root*." Without any disparagement to either of these, I wish mine to be distinguished from them, as being *genuine arrow-root*, which I am willing to have submitted to the severest tests, in order to prove its purity. It is made with the strictest attention to cleanliness, and superintended personally by myself. Had I been so disposed, I might have introduced it into market as Bermuda arrow-root; but I scorn the fraud, and am willing that it should stand or fall upon its own merits, although pecuniarily, this determination has made me a great loser. Still I am resolved to adhere to it.

I beg also to forward a small package of *Starch*, made from the root of the Manioc (Jatropha manihot,) commonly known in South America, as the *Yuca*, and in very common use as a vegetable, either boiled or roasted. I am not aware that any attempts have been made in this country to obtain the starch of this plant. According to Dr. Ure, (see Cassava,) the fresh juice of this plant, when distilled, affords a very active poison, thirty-six drops of which are sufficient to cause death in the course of six minutes. It was used by Indians for poisoning their arrows. He adds, "as the active principle of this juice is volatile, it is easily dissipated by baking the squeezed cakes of pulp upon a plate of hot iron," which is the well known Cassava bread or cake of the West Indies or South America. The starch of this plant "is called *cicipa*, in French guaayana; it is employed for many delicate articles of cooking, especially pastry, as also for hair powder, starching linen, &c." For the last two or three years, the root has been used at my table as a vegetable, and is much liked by my family. I myself have eaten it abroad, more than twenty years ago. Will you have the goodness to exhibit the specimen sent at the fair.

After the exhibition, the sample sent may be placed at the disposal of the Institute. At the last fair, 1845, a sample of my arrow-root was exhibited by my agent, Mr. S. Burkhalter, corner of Church

and Fulton-streets, N. Y., for which a diploma was awarded. Since that time my arrow-root has been examined by Dr. James Chilton, of New-York, who has given me a certificate that it is "fully equal to the best quality of arrow-root obtained from Bermuda," a copy of which I will request my agent to furnish you.

I am very respectfully,

Your obd't servant,

MILLER HALLOWES.

T. B. Wakeman, Esq.,

Cor. Sec. American Institute

BUTTER.

Goshen, Orange county, November 12th, 1846.

The following is a statement of my mode of manufacturing the butter exhibited at the Nineteenth Annual Fair. I have kept the past season fifteen cows, from which I have made *four hundred* pounds of butter from the first of May to the 10th of this month. I have taken no extra pains with my cows, giving them nothing but ordinary feed. My grass has been mostly timothy. During the whole time I have given them no grain or roots.

The ordinary course was followed in the manufacture of the butter, using Ashton salt. The labor of churning was performed by a dog.

Respectfully yours,

JOHN THEW.

BUTTER.

Newburgh, Nov. 13th, 1846.

Sir:—In answer to the questions propounded by you, in relation to the butter exhibited by me, at the Nineteenth Annual Fair, I will state that my cows are of native stock, with a small mixture of Durham. From the time they were turned on pasture in the spring until the present time, they have had nothing but grass; no extra

feed of any kind. For two or three weeks previous to making the butter exhibited, they were on low land meadow, containing natural and wild grass.

I have ten cows, and make from their milk annually, about twelve hundred pounds of butter. The manner of making the butter is the ordinary one, using as little salt (Liverpool) as possible, without any other foreign ingredient, and giving probably more attention than usual to working the butter. The average price obtained in market is about eighteen cents per pound.

Yours respectfully,

DANIEL T. ROGERS.

T. B. WAKEMAN, Esq.,
Corresponding Secretary.

IMITATION ENGLISH CHEESE.

My cows are partly of the Durham breed, the rest a cross of different bloods, which I think is the character of most of our stock called native, for they are so mixed with imported blood, that there is none, at least in our county. The farm on which I was raised, as well as the one I now occupy, (the Adcock farm, known as the Leicester farm,) were among the first in the importation of stock, which were of the long horn, or known as the Shakespear blood of cattle. The cows were good milkers, from them my best cows for milk and beef are bred by Durham bulls; the natives may be good milkers, but not equal for the dairy and butcher, which points should both be looked at by the farmer. The difference in size between a large and small cow is not balanced by the small cow not being able to consume as much food as the large one, for I have kept both in separate stalls, side by side, and generally one will consume as much as the other. The large cow that is well bred, will come off with much the best coat of flesh, proving that the small cow has a stomach equally capacious as the large one.

I stable my cows, which I deem better for the cows, and a saving of fodder; feeding with the coarsest food in the fore part of the winter, that they may have an increase in the quantity and quality in the spring. Cows kept this way will be in excellent condition for business the coming season. My pastures are principally dry. I

prefer old to new clover hay for making cheese. Our rule is, to have our cheese set at 6 o'clock, A. M. and P. M. Cows to do well should be milked regular and by good milkers. The milk is put immediately into the tub, and sufficient rennet added to bring it to a curd fit to break in an hour, with coloring to suit your fancy. To make a dairy of cheese that will average 18 pounds, requires about nine pails full of milk of the largest pattern. I do not know what it would weigh after being broken in the tub; we generally weigh it off in about half an hour after separating the whey from the curd; we then salt and break with the hand, and put it in the hoop and crush out the remaining part of the whey, which if set will produce cream and make butter that answers a good purpose for shortning, and if properly made is better for the table new, than a great deal that goes to market.

It stands three days in the press, during which time it is turned three times, and salted twice; when it comes out of the press, it goes into a strong brine, kept so by putting a handful of salt on each cheese as it goes into the brine; the salting tends to harden the coat and protect it from the fly. When it comes out of the brine it goes on the shelf; turned and rubbed now and then to keep the mould off.

It having been an unusually dry season the past summer, with only nine cows, we were obliged to stop making cheese the first of September, which only gave us 1,848 pounds of cheese and 400 pounds of butter, besides family consumption, (which is not small). 1,678 pounds of cheese sent to market, sold for $12.50 per cwt.

ROB'T S. MUSSON.

Gilbertsville, N. Y., Nov. 23d, 1846.

APPLES.

Cleveland, Ohio, Nov. 21st, 1846.

Your favor is received informing us that a premium has been awarded to us for 28 varieties of choice apples exhibited at the Nineteenth Annual Fair, and desiring answers to certain inquiries respecting mode of culture, &c.

We did not intend by the exhibition to enter into competition with others for the prizes; our object was two-fold, to test the genuineness of some of our own apples by comparison with eastern specimens of the same varieties; and to enable the numerous visitors at the Fair to judge of the size and quality of our western fruit. But if by the rules of the Institute we are found entitled to the premium we shall highly appreciate it, as a compliment to the excellence of our Ohio apples.

The specimens exhibited by us were obtained in part from our own trees, and partly from the orchards of two amateur cultivators in our neighborhood. As to these last we can only state in general terms, that by a moderate winter pruning, the trees have handsome well formed heads, are thrifty; the soil is sandy with a slight mixture of loam; land occasionally cultivated, and but little manured. Neither they nor ourselves raise any apples for the market, therefore of the amount raised, expense, or profit, we can give no account. Our own trees are planted along the walks in our nursery, and are cultivated to test the accuracy of the fruit, and furnish scions for grafting; soil, deep rich loam; land constantly cultivated. Our pruning is done the latter part of winter or early in the spring. We aim to give each tree a handsome open head. In the spring we rub the trunk of the tree with soft soap.

We ought to add, that of all the varieties exhibited we have grafted trees in our nursery of suitable size for transplanting. Our soil and climate are highly favorable to the culture of fruit. The apple, cherry, and peach are extensively cultivated in this vicinity, and large quantities are annually exported.

Very respectfully,

Your ob't servants,

McINTOSH & CO.

QUINCES.

Worcester, Mass., Nov. 23d, 1846.

SIR:—I have received your communication apprising me that I was awarded a premium for the best assortment of quinces exhibited at the late Annual Fair, and also making inquiries with regard to

my process of culture, time and mode of pruning, amount annually raised, cost, profit, &c.

In reply it is but justice I should say, that the specimens forwarded by me, were intended for exhibition only, not being of my own production. I regret I cannot inform you from which of two quince growers they were obtained, in order that due credit may be given.

Having recently set an orchard numbering 1,035 trees or bushes, of the two varieties forwarded for exhibition, (which I believe cannot be surpassed, if equalled,) I will give you a statement of my experience in the business of quince growing, fearing, however, that its value will be less even than my experience.

In the spring of 1843, I set forty bushes of the two varieties, which are known in this section of the country, as the "Great Orange and Pair," both of which are not only prolific bearers, but give fruit of remarkable size and flavor.

I put them on newly plowed sward land, which, however, was a matter of necessity instead of choice, as I much prefer ground well rotted. These I place in a single row, eight feet distant from each other, the ground being plowed on one side several rods, and on the other but a few feet.

In the autumn following, I spread on at the rate of about fifty loads of compost manure to the acre, the compost was one-third stable, and the balance good loam. At the proper season I planted the piece with potatoes, and have continued to do so up to the present time.

I have no means of arriving at the exact expense of taking care of this potato patch, but can safely say, that the crops have amply paid for the seed, use of the land, and all labor expended upon it. My third and last crop of potatoes was less than either of the former, and I think something else should be substituted, or cropping abandoned altogether. You can judge something of the growth of these bushes, when I inform you, that the whole forty when set, could be carried by a man in his arms without inconvenience, and that they have since spread so as to touch each other; although placed at a distance of eight feet.

In 1845, the second year after the setting, six trees gave about half a peck of fruit, and this season the same yielded one and a

half bushels; while those which had not borne any fruit, gave about the same quantity as those that bore last year for the first time. The fruit this season from the trees which fruited last year, has much increased in size, some of them weighing 16 ounces. On older trees in this vicinity, I have known them to grow so large as to weigh 25 ounces. So far as my own observation has extended, I have noticed that this fruit continues to increase in size for three years, and in quantity much longer.

The profit of quince growing I cannot speak of with any more accuracy than of the expense of cultivation, not having had sufficient experience in the business. One fact, however, that has come within my knowledge, may throw some light on this point. An acquaintance in the vicinity, ten years since, set in his garden 26 trees (or bushes), at a distance of 12 and 14 feet, and although he gave them but ordinary care, he realized in 1845 for some 60 bushels, (the crop of 26 trees,) the sum of $120. They yielded him an increased crop this year, but I am not informed of the amount of his receipts for them. They are of the same varieties set by myself.

Last spring I procured and set out 1045 bushes in rows at a distance of 16 feet either way; about one half of each of the kinds mentioned. Among them I raised a good crop of potatoes, preparatory to improving the ground as a quince nursery the ensuing spring. I have already a few small trees intended for it. I have pruned those 40 trees originally set but once, which was in Nov. 1845. My mode is to cut off all the branches, a foot and a half from the ground, and above that point, only those that seem to prevent the thrifty growth of others.

In relation to damage by insects, I will say, I have never suffered any inconvenience from them. As a preventive, I make it a point to wash the trunk of the trees, about 18 inches from the surface, with potash water of sufficient strength to bear an egg. This I do between the 20th and last of July, believing the egg of the insect to be deposited on the bark of the tree, near the ground, about this time. This is rendered easy, the body of the tree having been previously prepared.

Your ob't servant,

JOHN F. PERRY.

T. B. WAKEMAN, Esq.

REELED SILK AND COCOONS.

New-York, November 27th, 1846.

Sir:—Having been the successful competitor at the late Fair, in reeled silk and cocoons, I comply briefly with that regulation of the American Institute, requiring a detail of the course pursued in the attainment of superiority in any branch of industry or art.

I am happy to state, that there is *no secret* in my operations to which others may not have access. My reeling is done on the Piedmontese reels, which are propelled by a single power, and the water heated by steam. Experience alone can secure anything like excellence in this branch of the silk business. It is by far the most important process in silk manufacture, because upon it depends the perfection or inferiority of every after use to which it may be appropriated.

The cocoons presented by me were made at Washington, D. C., and Northampton, Mass. The worms were fed upon the foliage of the Canton, Brousa Multicaulis, and other mulberries. Either variety will make good silk if properly managed.

In order to the successful culture of silk, very much depends upon the management of the *tree*. It is worse than idle to attempt it with an unhealthy orchard. The ground should first be ploughed *deep* and manured thoroughly, (unless the soil is already good,) and otherwise prepared as for corn, only that the rows should be further apart, say five feet, and the trees only a few inches apart in the rows. There will then be room to cultivate, and every tree will be exposed to the rays of the sun sufficiently to mature the leaves. Our orchards must be well cultivated from year to year, and the soil kept loose and rich. This mode of planting is applicable to *branch feeding*, which is now considered best for the last ten or twelve days feeding. I have used in my feeding, which has been quite limited, "Gill's cradles," and a ventilated frame of my own construction. Having a supply of good healthy trees, we have only to give our worms sufficient room and air, keep them *perfectly clean*, *free* from *noise* and *confusion*, with *uninterrupted moultings* and *enough to eat*, and the demands of the insect are supplied. We may then expect returns corresponding with the extent to which we embark, and with as much certainty as we look for a harvest from any given number of acres of wheat, corn, or any other agricultural crop.

North of the latitude 40° we must construct our cocooneries in such a manner as to secure an uninterrupted circulation of air among our cradles and frames, at the same time we so construct as to enable us to close and apply artificial heat, whenever the natural temperature is below 60° to 65°, as is frequently the case in mornings and evenings and during storms. With my experience, I think I should recommend for this section of the country and the north generally, the Canton and Brousa mulberry, as more hardy and suited to our winters. The Canton particularly, is as rapidly propagated as the multicaulis, and equally adapted to branch feeding.

Respectfully yours,

A. C. VAN EPPS.

T. B. WAKEMAN, ESQ.

WINE FROM NATIVE GRAPES.

Greenville, Greene co., New-York, Nov. 12th, 1846.

SIR:—You desire me to give an account of my manner of cultivating the vine, pruning, &c. I fear my experience will add but little to the general information required by the society, as I am but a novice in its culture, and have as yet made experiments only from two kinds of grape in wine making, viz: the large round native grape, for which I know no distinct name, but is not uncommon and is wild in parts of this State.

The wine exhibited at the Nineteenth Annual Fair, was made from this grape, the vine was then four years old. My next experiment was with the "Miller's Burgundy" grape, the result of which was a perfect and excellent *Champagne wine.* In both cases, one and a half pounds of sugar were added to the gallon, in order to make up for any immaturity of the saccharine matter in the grape. In the preparation of my ground for setting out the vines, I trench two and a half feet, make my border from four to six feet wide, using well rotted horse manure, about half a bushel to a vine with a peck of unleached ashes. The following autumn I top dress with the same kind of manure one or two inches thick, and sometimes add additional ashes, letting this depend upon the original quality of the soil. In the spring fork it well under.

I prune about the 1st of November, shortening to four and six feet, leaving from two to four long vines or spurs from each root

stalk of one inch and over in diameter, and cut off to one and two eyes on each spur. My vines are allowed to lay on the ground during the winter, as taken from the trellis and pruned.

As I have stated above, I have so recently commenced the growing of vines, that I am unable to give further positive information regarding the quantity of grapes, cost, profit, &c. My bearing vines only number one hundred, although I have a large number nearly fit for the trellis.

I shall be happy to communicate to the society the result of experiments I have in view of making, both in the culture of the vine and wine making, at a future day.

I am very respectfully,
Your obd't servant,
T. L. PREVOST.

T. B. WAKEMAN, Esq.

CULTURE OF GRAPES.

Newark, N. J., Nov. 23d, 1846.

SIR:—Having been awarded a premium for grapes at the late Fair, I herewith comply with your request, by stating my mode of culture.

In the fall of 1842, the border was prepared by incorporating equal parts surface mould, sandy loam, and well decomposed stable manure. In June following, the vines were planted in the border on the outside of the house; one shoot or cane was led up from each vine to near the top of the house. In November these shoots were cut down to the second eye, and the vines protected from the sun by covering them with mats; the house occasionally ventilated in clear weather. About the 20th of March, the vines were excited by uncovering the buds so as to expose them to the influence of the sun; the border on the outside being carefully forked over. The temperature of the house was kept at this time as near 50 degrees as possible, the atmosphere kept moist by syringing freely, and the house thoroughly ventilated when the weather would permit; one cane from each vine was led up to the top of the house, as before, and in fall after the wood was thoroughly ripe, pruned to one-third its length, and treated as before, viz: protecting by mats during the winter;

the roots being protected by covering the border with long stable manure to the depth of six inches.

On the 12th of March, 1845, the vines were uncovered, and well washed with soft soap and sulphur, with the view of softening the wood, divest them of dust, kill insects, and prevent mildew; the after treatment the same as before. The vines were suffered to produce from six to eight clusters each, these were brought to great perfection; the leading shoot from each vine was again carried up to the angle of the roof. The buds which produced fruit were stopped two joints above the fruit, the clusters nearest home being generally selected, all laterals being stopped at two joints, and so continued through the growing season; the farthest extremity of the main shoot after being once stopped, suffered to run riot.

In November, the vines were again pruned, the main shoot being reduced one-third, and the shoots which had produced fruit, cut back to one, or at the farthest two eyes; the vines and border protected, as in the preceding seasons.

March 17th, 1846, the vines were again treated as in March 1845, and tied up to the rafters, one-third of each vine being tied up to within two feet of the glass, the remainder left pendant, till all the buds had broken. A humid atmosphere was maintained till the 17th of May, when the grapes were in bloom. For near three weeks after this time we had very dull, cloudy and wet weather, the temperature of the house seldom exceeding 65 degrees; but being determined thoroughly to test the practicability of growing grapes in this climate without fire heat, I applied no fire in two houses, and was surprised myself to set the fruit at so low a temperature. I of course kept the houses as dry as possible during the time they were in bloom, and availed myself of the advantages of a little sun shine to gently shake the vines or clusters, so as to disperse the farina.

I had an extraordinary show of fruit in each house, but thinned out at least two-thirds of the clusters, and one-third of berries on the remaining clusters, leaving but fifteen clusters on each of the large growing grapes, such as the black Hamburg, and not more than 20 on the Muscadine, Chasselas, &c. This appears a great sacrifice of crop, but I am convinced, that over cropping a vine is one of the greatest errors of grape culture in this climate.

By over cropping, you not only injure the constitution of the vine, but it is impossible to *color* the fruit; and consequently it is almost

destitute of flavor. By far the best practice, is to ensure a uniform crop whether grown for family use or for market.

As to profit I am convinced no part of horticulture is more profitable than the culture of grapes; the vine is comparatively hardy, and generous in its production. The grapes grown without fire heat sold readily at retail at 75 cents per pound; those forced and marketed in July, sold from $1 to $1.25 per pound. Much cheaper houses than are generally erected, would answer every purpose. The cost of labor it is impossible to estimate, having five houses to attend to, and about two-thirds of my time out of doors.

Very respectfully yours,

GEO. KIDD.

T. B. Wakeman, Esq.

DEPARTMENT

OF

ARTS AND MANUFACTURES.

REPORT

Of the committee on Cotton, Woolen, Silk and Linen Manufactures.

The exhibition of the above articles this year is highly creditable to the country. The goods are generally cheaper, better finished, and of greater variety of style and fabric than usual. The manufacturers have more than paid for the protection accorded to them by the government. Many new arts and inventions are introduced for home use; and there is progress and improvement, as well as economy in making, so that many goods are now cheaper than they have ever been in this country.

This is the universal verdict, not only of the judges appointed impartially by the Institute, who have patiently and faithfully discharged their onerous duties; but of the thousands of citizens who, in the well lighted saloon of Castle Garden have had an excellent opportunity of examining the goods for themselves.

It seems scarcely possible to doubt the propriety of giving encouragement to occupations producing results for the benefit of the whole commonwealth, such as were here exhibited. Our manufacturing interests, under the influence of diligent and sagacious perseverance, *free emulation among ourselves, and protection of our home labor against the combined operations of foreign pauperism and overreaching capitalists;* now exhibit the thrift and progress which were predicted for them under a wise and discriminating protective policy. If not uprooted by hostile legislation in favor of foreign inte-

rests and serf-labor, not only the deserving manufacturers throughout all the States, but all classes of the community must eventually be benefitted. In all the textile fabrics, with the exception of silk, which is still in its infancy, and but feebly protected, our manufacturers are now not only becoming familiar with the arts of Europe, the growth there of centuries, but are enabled to avail themselves of the improvements of the age; and to take the lead of many of them. Thus, many articles made in this country are now exported, because they are already produced here cheaper and better than elsewhere, and, *to a certain extent*, American skill and ingenuity is in this respect countervailing the effect of cheap foreign labor and low value of capital. But where *labor* is the *chief* ingredient of the manufacture, it is evident, *if we wish to preserve our present free and comfortable style of living*, we cannot allow a levelling competition from abroad. Not only the growth but the very life of some of our best manufactures must be arrested. Adequate and continued protection by our own government, and the popular encouragement of our citizens generally, are essential to their existence.

The committee deem it important to express this conviction boldly. Their familiarity with the details which enable them to form an unbiassed opinion; their yearly examination of the goods exhibited; the reports of skillful judges and intelligent merchants and manufacturers, and the whole tenor of their experience, compel them to declare themselves in favor of a steady and liberal protection to American manufactures. We have entire confidence in the faith, that *home competition, if not cut down and thwarted by vacillating legislation*, will speedily furnish goods here at as low prices as they could be had by any mode of barter from abroad. Cheap manufacturing, like cheap travelling, will grow out of individual, as well as patriotic emulation, where domestic or foreign monopolists do not interfere with us; and even if protection should cost us something at first, by depriving us of some of the cruel advantages of enslaved or oppressed pauper labor for a while, the country at large will eventually be more than remunerated by the comforts which our own free and intelligent laborers enjoy, and by the division of employments suitable to all our tastes, climates, and education.

Woolen Goods.

The samples of woolen goods are not so extensive this year as usual, but are enough to prove that there are scarcely any styles of cloths, cassimeres, vestings, coatings, carpetings, flannels, hosiery, blankets, merino, worsted, and other kinds of spun, knit and felt

goods, that cannot now be manufactured of our own wool, as perfectly as in any other country. Great improvements are manifest in many articles, the styles and finish of which have hitherto been objectionable. In dying and inter-weaving fast colors, and making fancy vesting and pantaloon stuffs, it is admitted, even by our most fastidious tailors, that there is great progress evinced. In our *wool dyed* cloths, we can this year exhibit fast colors equal to the French or German, and better than most of those sent us from England. Some of the cloths are also of more uniform finish and better framed and dressed than any in former exhibitions; particularly those from the Northampton factory, to which the first premium was awarded. Of the difficulty of producing such fabrics as these, our citizens have scarcely any correct ideas.

There are from *twenty* to *five and twenty* different and distinct manipulations combined in the manufacture of a yard of broad cloth. Most of these, in foreign countries are distinct and separate trades, to which usually the life of the artist is devoted. In *selecting*, *sorting* and *scouring* the wool, in *dying* it after it is *picked*, and again perhaps after it is woven, in *carding*, *roving*, *spinning*, *warping*, and *weaving*, all of which must be well done to get the wool into what is called a flannel, and then the minor operations of *scouring* and *burling* it, and the more important ones of *fulling*, *teazling*, *tentering*, *shearing*, *steaming*, and after various other processes of *dressing*, including *listing*, *lettering*, *&c.*, if all of these are successful, the manufacturer is at length in possession of a cloth. If he is enabled to do this at all he considers himself fortunate and entitled, perhaps, to some credit if not some emolument for the risks run, and the time and talent devoted to this art. But he must not expect to escape censure; thousands have found to their cost, that it requires almost a magician's art to prevent loss. Not only must every one engaged in any of the above manipulations, know how to do his part, or (if he has to do the whole) *well*, but he must watch and perform always, and all the way through the operation of every piece of cloth made *with surgical precision*, or ruin will follow, and disgrace overwhelm him. His fabric has at last to pass the ordeal of a critical, and often censorious public, who are perhaps "ignorant of what they are most assured," and condemn flippantly those who are fully entitled to the respect of their countrymen.

After thus stating what we are assured is correct in regard to the almost mysterious and very hazardous art of making such broad cloths as our citizens choose to wear, we are proud to assert that

there are American citizens now in our factories in this country who understand and perform this important national service, and are as much entitled to public praise for protection in this, one of the essential arts of peace, as any of those engaged in conquest of foreign countries, or who reap the highest glory of war by defending their own.

The committee feel it a pleasure and a duty to state, that the manufacturers of cloths appear now to do justice to the wool in manufacturing it, and not as in many former years to depend on the fineness of the stock to obtain a sale for ill-wrought goods. The Northampton cloths which were exhibited by, and may be procured of Messrs. W. C. Langley & Co., of this city, were made of the very finest wool, such as our farmers may be proud to produce; and it is done justice to by the skillful and fortunate manufacturers, and can be worn by our citizens at a very moderate cost. For this beautiful cloth the first premium, a gold medal was awarded.

The second premium, agreeably to the recommendation of the judges, has been awarded for the cloths exhibited by Messrs. Fearing & Hall, of the manufacture of D. W. Plumb, Derby, Conn. Although made of wool, less fine than the above, they are creditable specimens of the art of making and finish; and were much noticed.

To the Middlesex Co., of Lowell, Mass., a gold medal has been awarded for a sample of plain cassimeres, exhibited by Messrs. Wolcott & Slade, agents in this city. They were very fine, of good color and fabric, and the best plain cassimeres exhibited.

To the same company a silver medal was also given for samples of very beautiful plaid vestings, made of wool, and now much in vogue. The facility and success with which this factory meets the fashionable taste, is highly creditable, and renders importations unnecessary.

Messrs. Wolcott & Slade also exhibited a sample of the beautiful silk and wool tweeds, made by D. Kellogg, Skaneateles, New-York, to whom a silver medal was awarded.

The Institute has also given a silver medal to Welcome Farnum, Waterford, Mass., for thirteen pieces of his fancy cassimeres, exhibited out of the sale room of Messrs. Fearing & Hall, and it is to be regretted that the same distinguished manufacturer, who exhibi-

ted some very beautiful cloths which obtained the first premium last year, had not honored the exhibition this year with a fuller sample of his manufactures. We trust he will not omit to do so next year.

For two pieces of black cassimere, exhibited by Messrs. Gilman & Iddings of this city, a silver medal was given, manufactured by the Unionville Woolen Company.

The felt beaver cloths, manufactured at the Union Manufacturing Company, Norwalk, Conn, and exhibited by D. Brigham & Co., agents, No. 60 Pine-street, received a diploma from the Institute, and attracted much notice from the visitors. The competition between felt and textile fabrics is becoming of much interest, and will no doubt produce further improvements in the former.

We take occasion in this place, to notice a very deserving invention of Mr. William Emmons, 67 Forsyth-street, N. Y., who produces out of rags, cast off clothes, and almost useless scraps of goods that have been once worn, a species of flock or fibrous compound, which after being cleaned and carded, is capable of being made into new cloth. An invention entitled to much praise for its ingenuity and economy.

For nine pieces of double threaded cassimere of good fancy, and extremely well made, an award of a gold medal was given to the manufacturers, the New England Co., Rockville, Connecticut. They were exhibited by Messrs. Thomas & Dale, agents in this city, and were considered the best at this year's exhibition.

To the same exhibitors were given premiums for fine white flannels, although it was not considered that they were any better than those exhibited by the same house last year. The committee cannot but regret that of this important article, there were very few specimens sent to the fair, and hope another year will witness a much fairer competition.

The same remark is applicable to the important manufacture of Blankets, an article so essential to our country in all its wide domain, in war as well as peace. For the best and most beautiful specimens, a gold medal was awarded to the Whitney factory, New-Hampshire, exhibited by Messrs. Nesmith & Co., of this city. They were much and justly admired.

Of carpets and oil cloths, the committee regret to state, that the display was very meagre, compared with the ability of our manufacturers to exhibit. In the opinion of the judges there was scarcely any thing considered superior to what has been exhibited before. The premium committee have thought it best to award sundry medals and diplomas, as will appear in the printed list. The fine pieces of carpeting from the power loom manufactory of A. & A. Lawrence, of Lowell, exhibited, by Beals, Bush, & Co., of this city, agents, obtained a silver medal. The greatest praise is due to the inventor of this new mode of power loom weaving, by which more than half the former expense of hand weaving is saved. As Americans we exult in such a triumph of the arts by one of our own citizens, by which so important and useful an article as carpets, can be made thus, even better than by hand work, and defying foreign competition.

The committee has great pleasure in noticing the yearly improvement in the articles of worsted manufacture. The beautiful specimens of printed muslin de laines and cashmeres, rich in style and of very superior finish, which were from the stock of Messrs. Fearing & Hall, of this city, agents of the manufacturers, I. Dunnell, & Co., Pawtucket, R. I., attracted great attention, and obtained a silver medal.

In no department of our home manufactures, so far as consumption can give encouragement, can there be a greater inducement for emulation, than in the production of the various styles of de laines and cashmeres for female wear; suited to our varied climate, and peculiarly industrious population, and preferred altogether to calicoes on account of their graceful drapery and unfading colors. We are sure that a wide field is open for the growth of wool suitable for making and for the highest skill of the artist in designs, and taste in introducing them to the wide extended limits of our country, preparatory to their being exported as an article of commerce. We wish the pioneers in this vast trade ample success.

Messrs. W. C. Langley, & Co., of this city, agents for the Ballard Vale Company, Andover, Mass., exhibited several pieces of a new style of Orleans and Merino cloth, worsted and cotton and worsted, having a most glossy and finished appearance, and extremely well made and dyed, for which the highest premium, a gold medal, was awarded. We hope to see more of such goods next year.

Cotton Manufactures.

The exhibition of goods and yarns made of *cotton*, that great staple of our Southern States, upon which so many foreign countries are dependent for the supplies of what gives subsistence to their needy operatives, and accumulated power of machinery, and which is now an article of such vast consumption by our own manufacturers, was at this fair most highly gratifying to the public, and deserved the high encomiums passed upon it by the judges.

Now that a new impetus is given to its growth by the discovery of converting it into an explosive engine, surpassing gun powder, and made serviceable in mining, illuminations, fire works, &c., we cannot say too much of its importance. Our foreign rivals in manufacturing would desire no greater boon at our hands, than the purchase of all our cotton, and the monopoly of manufacturing it. In payment for this, their protective policy of centuries is now offered up, and a delusive free trade experiment held out, as a lure to us, so that England may have the benefit of all the most profitable labor in the world, by which she would soon reduce us to a state of colonial vassalage. But the skill, industry and economy of our northern fabricants of this southern staple, and the commanding influence of a free and enlightened public opinion, are sure to counteract all attempts of this sort, come in what shape they will. We have passed the crisis when the privilege of diversified occupations and the right of amassing capital by the free and independent application of our own labor were looked upon as violating the constitution of the country. We doubt not now of protection to our manufacturers, as well as the other home interests, on the principle of national independence, as well as of equal justice to all classes of the community.

In surveying the proud specimens of progressive industry and ingenuity which our late fair exhibited, we are sure that no retrograde movements can ever disappoint our present anticipations on this subject. From the coarse but even spun yarn of *Georgia*, to the sample of No. 150, from the Portsmouth, *New-Hampshire* steam factory, (*which is to contain* 60,000 *spindles.*) from the finest and most beautiful fabrics produced at the James steam mill, of Newburyport, and the long celebrated New-York mills, in this State, to the coarse cotton drills in which the British troops in India have been clothed, we have abundant evidence of what skill and perseverance can do in this country. Either under the influence of free

trade, or its opposite, as respects *cotton* and *its manufactures* in this quarter of the world, the English will be puzzled to do with us or without us. If our own government will abstain from vacillating legislation, and allow our own people to give the manufacturers that encouragement they desire, we shall eventually witness their complete success. Talent will be stimulated, industry rewarded, merit and enterprise cheered, and a wide field be opened for the productive energies of future laborers in pursuits that are worthy the ambition of a free and enlightened republic.

From the full and discriminating report, drawn up by the judges, who critically examined the specimens of cotton goods, the committee have derived much assistance in awarding their premiums. A few condensed remarks will be all that are necessary to add to their statements.

It was really astonishing to notice at this fair the low prices at which most of the cotton goods were to be had in this market, notwithstanding an advance since last year of more than fifty per cent in the raw material. Calicoes of the most splendid style and fast colors, at 8 to 12 cents per yard, common ones as low as 3 to 4 cents and some of good colors, at 6 cents. Mousselins de laines at 18 to 25 cents, such as formerly were sold at more than double these prices; these and a handsome variety of the finer bleached and colored goods, such as have not hitherto appeared at our fairs, are ample proofs of the rapid strides we are making in the manufacture of cotton textures, both in science and economy.

A case of goods containing samples of bleached and brown cottons from the James' Steam Mill, H. A. Smyth, agent, 43 Pine-street, obtained the gold medal of the Institute and the encomiums of all who examined them. The judges pronounce these goods "by far the best specimens of cotton shirtings they have ever seen exhibited. So perfect are they, it would be difficult to suggest any improvement. These goods illustrate in the most forcible manner, the high perfection our countrymen have reached in machinery adapted to spinning and weaving cotton fabrics."

Another article to which a gold medal was awarded, was drilled jeans from the New-York Mills, exhibited by the agent in this city, Charles Carville, 26 Broad-street. A silver medal was also given to the same for extra superfine water twist shirtings and New-York Mills sheetings, well known as a staple article in our market, and which

the judges say, "possesses all the requisites for great durability, and are rarely surpassed in fineness and uniformity of texture."

For a rich and variegated specimen of fancy and staple fast colored prints from J. Dunnell & Co's. works in Pawtucket, R. I., exhibited by their agents, Fearing and Hall of this city, the gold medal of the Institute was awarded. The committee in this instance duplicate the well-earned compliment due to these prints for skill and finish given their goods, a gold medal having likewise been given them for the best specimen of mousseline de laines. The judges declare their calicoes "not surpassed by the best foreign specimens in market."

They also pronounce the prints manufactured by the American Print Works at Fall River, exhibited by the agents, Messrs. McCurdy, Aldrich & Spencer, but little inferior to the best, and for these, a silver medal is awarded. The judges state that "our calico printers have made astonishing progress in their art. Their beautiful designs and splendid coloring, and superior execution, cannot be surpassed. The ever changing styles exhibit their abundant resources of taste and fancy, and the astonishing low prices they are afforded at, places the use of them within the reach of all."

In addition to the foregoing, silver medals were awarded to the New-York Mills for Roubeyx cassimere, presented by Messrs. Fisher, Hone & Hamilton, agents in this city; to James Wragg, English Neighborhood, N. Y., for three rolls of very superior press cloth, and one horse hair do., exhibited by Crocker & Warren, agents in this city. Also to Bowen & McNamee, of New-York, for mousselin de laine exhibited which the examining judge pronounced to be "superior, beautifully designed, richly colored and finely executed, comparing well with the best foreign article in the market. This is comparatively a new article of American manufacture, and entitled to high praise."

Diplomas were awarded for several very creditable specimens of various manufactures, viz: to A. & W. Sprague, of Providence, R. I., for chintz prints, good quality and entitled to high praise.

To Shepard & Son, Taunton, Mass., for bleached and unbleached Canton flannels, strong and well made.

To Alfred Hyatt, Patterson, New-Jersey, for a good specimen of buckram.

To Ida Mills, Troy, N. Y., for a handsome specimen of striped shirtings, exhibited by the agent, Charles Carville, Esq.

To J. L. Pearce, of Utica, N. Y., for a good specimen of bed-tick.

To the Phœnix Company, Providence, R. I., for wide and heavy cotton sheetings, a very good article; Shepard and Howe agents in this city.

To the Claremont Factory, N. H., Blashfield & Smith, agents, 38 Pine-street, for the best wide cotton bleached sheetings, an excellent article, and well bleached.

To the Hamilton Company, Lowell, Mass., for a superior article of cotton blankets, exhibited by Nesmith & Co., of this city.

The foregoing, and a great variety of other articles, of which cotton formed the whole or principal material, gave great satisfaction to the visitors, and were highly entitled to a compliment from the Institute. But where discrimination and preference must govern, and the recommendation of impartial judges is the guide in distributing premiums which must necessarily be limited in number to be of any value, we trust it will appear evident that the premium committee have *endeavored* to discharge their duty *without favor or reward.*

Hemp, Flax, and Linen Goods.

The exhibition of these articles was a very limited one. The committee regret that the growth and manufacture of these important staples have hitherto been so little encouraged. But two specimens of hemp were presented for examination, both of which were very fine, and sufficient to prove that the article is produced of a quality fully equal to any imported.

For the best, exhibited by Messrs. McGregor & Morris, of this city, and grown in Kentucky, a silver medal was awarded.

For an excellent specimen of sewing twine and shoe thread, which were made by L. T. Beardsley, Watertown, New-York, and which the judges pronounced to be "very handsome, and for strength perhaps unequalled," a gold medal was given. The committee would gladly have awarded further premiums for similar proofs of what could be made to advantage in this country, and hope another year to have an opportunity of so doing.

In the absence of these very important fabrics, and to show the extent of what is going on in several parts of the country, the committee have obtained the following information which it deems important to have generally known, and particularly brought into notice as worthy of the patronage and protection of the government.

The interest taken by the Institute in the encouragement of hemp and flax growing in this country at the last Fair, and by giving its highest premium, and wide spread notice to the ingenious and useful invention of Mr. Geo. W. Billings, of St. Louis, Mi. for his patent machinery for the speedy water rotting and spinning of hemp and flax, we are glad to hear has done the country some service. Dew rotting is found to be too expensive and uncertain, and water rotting, under this new American process, bids fair to succeed better than that of any other country. We are glad to hear it well spoken of by a practical manufacturer of hemp, and that Mr. Billings has satisfied the government of the capacity and usefulness of his invention to supply a stronger fibre, and better fabric for the yarns required to make their cordage, than they have been able to get from Russia. When confidence in its success shall have induced capitalists to come forward to introduce it into the States where hemp and flax can be raised to most advantage, we think the manufacturers can defy foreign competition, sustained by the privileges they will have of cheap transportation to markets where it can be used; but to encourage capitalists to embark with confidence in such undertakings, they ought to be adequately protected by duties on the foreign manufactures, which such countries as Russia, Germany and Scotland are sure to deluge us with, even at great self-sacrifices, in order to defeat our depriving them of a very extensive and hitherto profitable market. It requires a governmental defence to stop the proclivity incident to long accustomed trade, and it is not to be supposed that we are to have the good will and possession of so valuable a property, even though we have as good a right to it at least, as those who are not native or naturalized to the soil which furnishes us the staple, and the institutions which give us the freedom to manufacture it with our own skill and labor.

If our farmers and planters are not ready to admit the propriety of this reasoning, the committee would beg leave to compare the situation of our new and enterprising manufacturers, trying to give encouragement to the growth of hemp and flax as a new variety among the employments of our hardy yeomen, to the situation of a horticulturist or farmer who wishes to rear up a growth of young and

valuable trees in the neighborhood of a populous city, or on a field which has been a common range for men and beasts for a long time. The ground is his own, and if the trees can be raised, he is sure of benefitting himself and the country. Would it not be wise and right in him to guard them with proper fences, to keep out the cattle and prevent incursions from intruders? Young oaks may be browsed down by being left exposed, whilst your trees may stand alone, or form a forest of themselves, needing no protection. Many of our infant manufactures, particularly those of hemp, silk and linen, to say nothing of ultimate protection, do certainly require the defence and fostering care of our government now.

In regard to hemp and flax, much consideration is due to the saving of transportation, which will give them their chief security. A near market, or a near manufactory to convert them into less bulk, are absolutely necessary to their being made a profitable growth. Russia cannot compete with us in the raw material, when once we get possession of the home market. This is true also of the flax growers in Europe, and already proved in regard to hemp and cotton bagging in Western Ohio, Kentucky and Missouri. Cotton bagging that was once costing our planters 40 cents per yard, can now be had for about 10 cents. This article has been and is sufficiently protected and the result is obvious.

But it is not so yet with the manufacturers of sail duck, linen goods, and many less bulky articles not secured against foreign interference, by costly transportation or a suitable protection. These are all worthy of early attention, and what healthier, more desirable, or more universal occupations can be secured for our increasing free population, than the raising and manufacturing of hemp, flax and silk?

There are at present in operation in this part of the country,
2 hemp, and 1 flax factories in New-Jersey,
2 flax factories in New-York,
1 " " " Massachusetts,
in which the aggregate capital invested is about five hundred thousand dollars. They use of hemp, American dew-rotted, chiefly Kentucky, annually, about one million pounds; of flax about three millions pounds, about half of which is imported. The number of hands now employed in these factories may be,
420 in flax mills,
150 " hemp "

The hemp spun in New-York and New-Jersey is chiefly for sail duck.

The finest flax spun, is about 24, or 7,200 yards to the pound. Hitherto it is not a profitable business, owing to the immense importation of it from Scotland, where it can now be made cheaper than we can make it, *the duty on the hemp and flax in this country being quite equal to the duty on most of the manufactured articles, so that there is no protection.* Cotton bagging is an exception. Vast quantities of this are made in the west, as already mentioned. The growth of hemp in that quarter is greatly on the increase. We notice that for the two years 1841 and 1845, there were registered as passing St. Louis alone, over 90,000 bales hemp.

The capital invested in Mr. Beardsley's flax and tow factory at Watertown, New-York, is $15,000 for machinery; for stock usually, $10,000. He manufactures annually, over 300,000 pounds, with about 60 hands in his employ.

Silk Manufactures.

So many of the general remarks which have been made in the preceding reports on cotton, woolen and linen goods will apply to the condition and exhibition of the silk department, that the committee will forbear repeating them. It will suffice to say that great interest is always manifested by the public and the Institute in what relates to silk and its products. No portion of our industrial or inventive and enterprising population is more closely cheered by public sentiment, or receives a stronger sympathy for the struggles they have to make, than the silk growers and manufacturers; and it is with deep regret that we have to report such a slow progress in their labors.

The exhibition this year was respectable, and gave to many great satisfaction; but to the judges and to the Institute it did not witness that forward march in quantity, variety and improvement which their sanguine wishes had led them to expect. The committee of judges were among our most distinguished and competent merchants in the trade, and in their unprejudiced opinion we have great confidence. They say, "The exhibition of silk *manufactured* goods (sewing silk excepted,) has not much improved since last year, and presents but little that differs materially from former exhibitions. They would have been gratified to have noticed a greater variety, and more improvement in this branch of American industry."

When it is considered that to this branch of manufactures liberal and additional premiums are offered, more than are extended to any other manufactured goods, it must be strange that so little attention is given to obtain them. We trust the manufacturers are not absolutely discouraged by the hostility of interested partizans towards them, and the apathy of our citizens in suffering them to perish. So much has been written, published and done by the president and members of this Institute in favor of giving special attention to the introduction and production of the silk manufactures, that it is almost discouraging to make further appeals to the public. We are all, however, most deeply desirous that a better spirit should prevail, and that success may still crown the efforts of the few generous and persevering individuals, male and female, who have given their money and their devoted labors to this cause. Among these we cannot deny ourselves the pleasure of naming Myndert Van Schaick, Esq., of this city, who has generously placed one thousand dollars with the trustees of the Institute to be used for the growth and advancement of the silk interest in this country. For two exhibitions there have been liberal appropriations made from this fund to encourage exhibitors both of cocoons and manufactured silk.

We subjoin a list of the premiums awarded, and regret that we had not an opportunity of giving as many more; which, by the aid of a liberal patronage of the visitors and the Van Schaick fund, we had it in our power to do, had the articles exhibited been entitled to them; but we now reserve this unappropriated fund in the hope of having a better opportunity to apportion it to the meritorious competitors hereafter, together with the usual awards which may be given at our 20th annual fair.

Raw Silk.

The display of cocoons and raw silk, was much more creditable than that of some of its manufactures. Several new specimens of cocoons, and a very beautiful and ample exhibition of raw and reeled silk, attracted the admiration of thousands of visitors, and as will be perceived, obtained the awards of the judges, and a liberal participation in the premiums of the Institute.

All which is respectfully submitted.

C. C. HAVEN,
Cha'n. Committee on Cloth, &c. Department

REPORT

On the progress of improvements in Machinery, as exemplified and shown in the machines, or the products of machinery exhibited at the late Fair of the American Institute; with remarks upon the important bearings, and uses of cam motions in the construction of machinery, given with a view to a furtherance of a knowledge of the causes, and mechanical facilities by which labor saving machinery is created and brought into public use.

The three great wants of man, whether in a civilized or barbarous state, are, *food, raiment* and *shelter.*

To satisfy and gratify these great primary wants, man has in every age of the world sought out many inventions.

It is a well settled fact in the history of the world, that the greatest proportion of all the improvements in machinery, which have taken place since the world began, have been made within the period of our own times; that the observing man of fifty or sixty years of age, can tell, as it were, the very day in which the mechanical productions have appeared.

We have no occasion, therefore, to go back to remote ages and trace, step by step, down to the present time, the progress of improvements on the loom; our only object in turning back is to show, that in this, as well as in most of our important machines, they have been stationary and non-progressive, for centuries antecedent to the present; that to our own times the history of mechanical events of a thrilling character are due, and that the influence and effects of this progress of improvements in machinery, thus brought to bear upon mechanical genius by what has already been done,

must tend to very great perfection in future, and that more startling events may be expected to take place hereafter.

The oldest machines in the world, are the wheel and distaff, the loom, and mills for grinding grain.

The spinning and weaving of cloth, to clothe mankind, comprise by far the most extensive range in amount, of all the machinery in use, and the different purposes for which it is used in cloth making, are extremely numerous; only a part of which shall we have time to notice, *and first, of the loom.*

Judging from ancient specimens of cloth making, which have come down to us from the tombs of Egypt, we are able to form a correct judgment as to the state and perfection of machinery at that time.

The oldest specimens are all of linen, being made from a material of long staple, from necessity; the long material was spread and wound upon a distaff, and by the manipulations of the fingers of one hand, the long fibre was run off in unison with the twist of a spindle, to which motion was given by a wheel and belt, by the other hand.

It is presumed that many years elapsed before any attempts were made in the art of spinning a material of short staple; but that goat's hair and long wool, must have been the next material attempted, and such may have been prepared by the rude means of a comb made of the splints of reeds, and worked, not unlike the manner of working worsted not many years ago. The process of carding short fibrous articles into a roll, belongs to a later day.

Judging from the specimens alluded to, the loom of the ancients was of most simple construction, and that its ability went no farther than a single change of the shade to cross bind and embrace the filling; such a loom must have had a yarn and cloth beam, revolving or otherwise, most likely the latter; a harness to cross the shade, something in the form of a reed to beat up the filling; and some device to pass the filling through the web to represent the shuttle.

Upon such a loom the productions could not have exceeded a single yard of cloth per day. In this state of simplicity, it may have been used for a term of two or three thousand years; in proof of which, a loom is still used, in some parts of the East Indias, but little advanced from the one described.

At what precise time the swinging lathe containing a reed, the foot harness treadle and a real shuttle, (the loom of our forefathers,) was introduced, is unknown to us, but the use of several pairs of harness, by which a web of a more complicated character was made, is comparatively modern, and still more modern was the appearance of the celebrated fly shuttle, a very efficient instrument in the hands of Englishmen, fifty years ago.

The invention of the Jacard loom, in France, about half a century since, was a circumstance of great interest in the history of the loom; this was an invention relating solely to taste and ornament; the loom was not made by it more productive; by the use of several harnesses, small figures had been previously made, but Jacard originated the idea of furnishing each individual thread of the warp, with an independent harness, and these so arranged and governed by the operating *parts*, as to bring, at each successive stroke of the lathe, any number into action.

In thus controling the action of each thread, any number are brought to the upper side and are seen, while the remainder are depressed, and seen only upon the opposite side of the web; this constitutes what is called damask figures, and is done by a simple two fold crossing of the general shade of the web; by an arrangement of a three fold crossing of the shade, a portion of the threads may be screened from sight on either side of the web or brought out to the surface, and in this way figures, of every conceivable design were elaborated and produced, translating at once, that old useful machine, from a plain unpretending implement of utility, to a rank of equality, with the finest production of the needle in embroidery, or the pencil in painting, and claiming for it both a relationship with the fine arts, and immortality to the name of the inventor.

But we must pass on to notice the climax in the progress of improvements in this valuable machine.

It remained for American ingenuity and the use of cam motions to set this machine agoing without hands, by which a person can tend a number of looms, at one and the same time, and make at least *ten fold* to that of the loom of our forefathers, (including the fly shuttle,) and a hundred fold to that of the loom of the ancients.

The loom is not only the oldest of all machines, but the most important of all others, and entitled to our most profound admiration.

We have been in the habit of looking upon the steam engine as indispensable to our wants, and we admit, that no human calculation has ever yet given to that power its due importance; still we could dispense with the steam engine, and in fact with all other machines excepting the " wheel distaff," with less inconvenience to man, than with that time honored machine.

To dispense with, and discontinue the loom, would be not to unclothe a world entirely, but to send civilized man back into a state of barbarism; at least to clothe him in sheep skins and goat skins, the habiliments of barbarism.

Whether therefore we consider the loom as it relates to extent of its productions, its utility and usefulness to civilized man, or the beauty of its fabrics, it is in either case, the *wonderful* loom. The productions of the loom continue to receive the highest honors of the Institute.

In the meantime the progress of improvements in machinery for spinning purposes, has been equally rapid and important; indeed the ratio of increase has been vastly beyond that of the loom, in which improvements, cam motions bear a conspicuous part.

Like the loom, machinery for this purpose was stationary for thousands of years; the idea of working more than one spindle by a single person, has been conceived within the space of eighty years. Richard Hargrave, of England, invented the spinning jenny in the year 1767, of eight spindles, worked by hand. In 1769, Richard Arkwright invented the use of rollers in spinning; the former was upon the general principles of the large spinning wheel of our forefathers, and the latter was upon the principle of the small or foot wheel, and was the first power spinning frame in the world, and the commencement of what is now called Throstle spinning.

In 1779 Samuel Crompton combined the qualities of both of the previous inventions together, and therefore called it a mule.

The spinning jenny, by the invention of the condensing carding machine for wool, has been entirely laid aside in our most improved factories. The other two hold on the even tenor of their way.

In the latest improvements in mules for spinning cotton, one person tends a frame of a thousand spindles, at a rate of speed in each

individual spindle greatly increased from that of the old hand spindle; in short, these machines are now self tending in character, requiring the attention of only a single person to run them. In throstle spinning a single person tends 250 spindles, running at the rate of 6,000 turns per minute, the old hand spindle being less than a thousand turns, and this speed is attained upon very fine yarns, say No. 40.

In mules the increase has been 3,000 fold, in throstles, 4,000; so entirely has been the change in this department of cloth making, that the old time honored "distaff" has been nearly expelled the haunts of civilized man. Our young folks have heard or read of it, but have never seen it; the "distaff" is now an obsolete thing.

Material now of short staple, is spun with more facility than of long; a great staple has been brought forward into almost universal use, in the shape of cotton; aided by the invention of the cotton gin by Whitney; till now, by the cheapness of the fabric, and the force of habit, the population of one half of the entire globe are compelled to continue and perpetuate its use.

Specimens of fine spinning as high as 150 hanks to the pound, were exhibited at the late fair.

In the meantime, machines for carding by power, and that extraordinary machine, the machine for setting card teeth, have been invented; the latter of which is deserving a particular notice, and to which reference will be made presently.

The cotton gin before alluded to, is among the associated machines in cloth making, too well known and appreciated to require any further notice of it.

That beautiful conception of doubling and drawing out many hundred times in length before twisting short staple into a thread, to equalize the same to a uniform size when fully attenuated and drawn out, is the result of the growth, manufacture, and use of cotton. Machinery for making iron and steel reeds, for picking raw materials; for spooling, reeling, and throwing of yarns for preparing wefts, calendering cloth, folding and pressing into compact bales for ease of transportation, are also associate machines in the progress of improvements in cloth making, and of modern invention. The art of raising a nap on woolens, is comparatively modern; and to that discovery were added fulling mills, and the invention of cloth shear-

ing machines, teazeling machines, &c., also that beautiful art imitative of embroidery. The printing of figures upon cloth, so universally in use at the present day for ladies dresses, is not very ancient. The same was at first done by hand with wooden blocks, having the figure cut upon the face of them; but it is now done with incredible despatch by a machine, the figures being engraved upon fine copper rollers operating in such a machine.

But it is not our design to enter into all the details of this numerous class, time would fail; injustice will be done to our subject however, if we pass unnoticed, the card setting machine, the movements of which are effected almost exclusively by cam motions, and the importance of which, as a labor saving machine, nearly equals the power loom itself.

The material of which cloth is made, is in all cases, with the single exception of silk, required to be brought from a promiscuous undefined state, into a regular longitudinal arrangement of the fibre, by which a continuous uniform body of the material may be by various modes, extenuated and twisted into a thread, preparatory to its ultimate transformation into cloth by the loom.

In this process of arrangement, the card is the agent, and it may be said, the laboring agent, of bringing order out of disorder, and of giving form to confused matter.

In all operating machines, there are parts which are denominated the working or wearing points in such machines, and in the series of machines by which cloth is fabricated and made, the card answers to this appellation; the extreme fineness of the wire of which they are composed, and the great labor which they perform, tends to their rapid and inevitable destruction; and on this account the advantages of an expeditious means of their reproduction is apparent.

In the commencement of cloth making by machinery in this country, the manufacture of cards was by hand labor, aided by two machines; one to prick the leather, and the other to cut and bend the wire for the teeth; after which, the same were set into the leather one by one, by the hand.

This was especially the state in which the manufacture of cards in the years from 1810 to 1813 was found, when the setting of card teeth furnished employment for thousands of women and children in Massachusetts, Connecticut, New-Hampshire, Vermont, and Rhode

Island; so much so, that in a circuit of country extending around the town of Leicester, Mass., (then as now the centre of that branch of business,) for a distance of one hundred miles, it had become a general occupation for that class of individuals. This slow process, had it been continued without improvement until now, would have required the labor of several hundred thousands of women and children of this country to supply our increasing want of that article.

The invention of the card-setting machine, when rightly viewed, was an event of great and surpassing importance; it is a machine associated with the power-loom and other kindred machines of American invention, which have together effected an entire change in the mode and means of cloth making in this and other countries. A large share of the credit of this change must be attributed to the invention of the machine in question, by Aaron Whittemore, then a citizen of Cambridge, in the State of Massachusetts.

It should in justice, be observed, that Pliny Earle, of Leicester, was at the period named, the principal maker of cards, and that the name of Earle has ever been prominent in that branch of business, and has been stamped on more sheets of cards than all others put together.

These little, but vast labor saving machines, are the representatives of more than a million of hands in this country and Europe, but without the aid of cam motions, this immensely useful machine would be a cypher—a nonentity.

Two admirable specimens of the card-setting machine were on exhibition at the Fair, and received the deserved honors of the Institute.

Before leaving this head of our subject, cloth making, it may be remarked, that nearly as ancient as the loom, wheel and distaff, is the art of knitting; but to which art nothing was contributed in the form of a machine, until about sixty years since, when the celebrated stocking-loom of England, was invented; which discovery and invention has been marked with astonishing results in a pecuniary point of view to that country.

It has been estimated by an Englishman of the highest standing, that since that discovery, England has made hosiery sufficient to cover the entire land surface of the globe; and that the gain to that coun-

try arising from such manufacture, has produced about one third of the present wealth of that vastly rich nation of people.

These stocking-looms are operated by hand. It remained, as usual, for American skill and ingenuity to knit hosiery by power, in which cam motions bear an indispensable part. Some of these inventions are capable of turning out a stocking complete, without a seam. There are at this moment in active operation in this city, twenty-five power-looms for knitting stocking shapes; or in other words, the hand stocking-loom of England has been converted into a power-loom machine.

There is also an establishment of this kind in a neighboring town in Connecticut, having already expended $85,000 in machinery and the purchase of the right, and are now making 800 shirt-patterns per day, at a cost of eighteen shillings per dozen for weaving; being only 1½s. each. The manufactory is to be extended soon to 1500 per day.

But these inventions have not yet received the attention they deserve from capitalists; and here let it be observed, that no better project for the profitable investment of capital can be presented, than in putting in operation to a large extent, *good* machinery for that purpose; it is an open field for American enterprise to enter and amass wealth.

There is another class of machines which, although they are not employed in cloth making, belong nevertheless, to this branch of our subject, being embraced in the category of machines, which make up our wants in wearing apparel and dress, or accompaniments thereto.

I will first notice pin-making and pin-sticking machines, which have appeared within the space of a few years. Not more than fifteen years since, it was in evidence, before a committee of the British Parliament, that in the manufacture of pins, the art was divided into 102 distinct branches, to each of which a boy might be apprenticed and learn a trade.

Pin machines have been invented some time, nearly half a century, and various and repeated attempts were made to introduce them into England without success. American enterprise, however, prevailed. An over-supply is now made on American machines at the present time in this country.

But a still more important machine in the pin-making business, has appeared within the space of ten years, in the machine for sticking pins on paper. This machine has reduced the labor of pin-making more than one-half in addition to the labor saved on the pin-making machine itself.

The quantity of pins now made in this country is about 500 tons, and this amount is made on about 100 machines. The movement of these machines are effected almost exclusively by "*cam motions.*"*

Other kindred machines have been produced. The machine for making ladies' hooks and eyes depends on cam motions.

Machines for the manufacture of cloth-covered and metal buttons have appeared, and are of the greatest importance. The business of button-making has been carried to the highest degree of perfection in this country only by the aid of suitable machinery.

Machines for braiding straw and other materials for ladies' hats, have recently appeared, of great ingenuity and usefulnesss, in which cam motions prevail. Machines for weaving stock-frames and stuffers, and for weaving hair cloth by power-looms, have appeared; and here again, it may be said, that cam motions are indispensable. Machines for making men's hat-bodies have appeared, and so cheapened that article, that now, while furs are getting more scarce, and distant, and rising in value, hats are getting more plenty and at less price. We pay $5 or $6 for a beaver that our forefathers paid twice that sum.

We will now notice two or three other machines in this connection, and then pass to another branch of our subject.

There has been invented within two or three years, a machine of great promise, for burring wool, and separating impurities, such as sticks, hay and straw, and other substances lodged in the fleece, which have been the occasion of great destruction to cards, or otherwise removed by hand. Attempts had heretofore been made with partial success; but no plan had before been suggested which did not more or less injure and break the staple. The machine in question was invented by Stephen R. Parkhurst of this city, who is now in Europe introducing it in foreign manufactories. It has been so

*The pins exhibited at the late Fair show the result of these improvements in pin-making machinery. The cost of pins has been reduced within the last ten years from $2.50 to 25 cents per pack.

far perfected by the inventor and others, and the demand for them so much increased, that now, in a neighboring town, at least one dozen of these machines are turned out weekly, and sold to manufacturers of carpets and other woolens; and we have no doubt that one of these purifying machines will, within a few years, precede every machine card for woolens in the country, effecting a saving in the destruction of cards amounting to some hundreds of thousands of dollars per annum.

Another machine alluded to has been invented more recently still, in this country; we refer to a machine invented in this city by Mr. Emmons, for the purpose of preparing worn out or damaged woolens, silks, &c., in a manner suitable for re-manufacturing into cloth. Damaged or cast-off linens and cottons find a ready market for reproduction into paper. Refuse woolens have been comparatively valueless, (although such a machine has been in use in Europe for several years, but strictly monopolized by England;) with this machine, tons of this waste, may be converted into cheap carpets, and old silks be made into handkerchiefs for a numerous class.

A machine of great ingenuity was brought out in Cambridge, Mass., last summer, for sewing cloth. In effecting this object, the author has invented a new and beautiful stitch, on which account the machine possesses additional interest. We look for the adoption of this machine in the manufacture of clothing by the trade in large cities.

Such have been the results in the space of half a century, of the combination and co-operation of these various machines and improvements of machines for the production of wearing apparel, that the distinctions of society arising from the nature of dress, are now no longer known by the quality of a coat a man wears. The middle classes, the mechanic and the laboring man, are seated side by side with the wealthy in our churches and other places of public resort, without offence to decency or propriety.

I pass from this principal head of my subject, raiment, to notice what has been done in the same space of time for increasing the facilities of producing food. Under this head, we commence with the oldest in the catalogue—the grist-mill.

All the essential improvements in these mills and other kindred machines for grinding grain or preparing the same for food, have pro-

bably been made within one hundred years. The mill of the ancients would not be called a machine at the present day; but under the transforming power of the age in which we live, the grist-mill is now a machine upon a grand scale.

It is to be presumed that the first attempts for the reduction of grain to a powder, were very simple. In the absence of proof on the subject, we draw upon the imagination to supply a presumed account of its history and progress. At the outset, no doubt, two simple flat stones were selected and placed one upon the other, and having the grain between them, were rubbed together by hand; and in this form, the germ of the now powerful and perfect mill appeared. An eye in the top of the stone for the convenience of introducing the grain under it, next followed; and anon a spindle, a curb and rotary motion were each attained, with a crank to drive by hand. In this condition, we are told in Scripture, "two women shall be found grinding," &c., at a period two thousand years since; and in this state it may have continued two or three thousand years.

But it is presumed that the grist mill is among the very first of all machines driven by power. Wind has been employed as the propelling power for "grist mills," for several hundred years;* but it must be recollected that in no instance was this kind of mill furnished with the now ordinary fixtures for elevating the grain to the loft, or any other mode of hoisting than a man's broad shoulders and efficient knee joints. The power was employed simply to rotate the stones and the bolt; to these mills no such a thing as a smut machine, cooler, or packing press was ever known, and the same remark would apply to water mills a half a century ago. The grain was transported to and from these mills in bags.

The grain was ground but not purified. It remained for the master genius of man as a mechanic, the first of the age in which he lived, to ordain that the old grist mill, should assume the distinctive traits of a machine.

Oliver Evans concentrated his powerful mind upon it, improved and left it perfect, so that to the present day, with the single exception of a more perfect smut machine, no great improvement has been added to it, since it came from his hands.

A merchant's flouring mill of the present day is a huge machine.

* Wind mills were invented in the time of Augustus Cæsar.

In addition to the ordinary hoisting machinery of the day, it contains an elevating machinery peculiar to itself; that is, an endless belt of leather passes over a drum or pully in the loft, to which is affixed a succession of lifting buckets throughout the circuit of the belt, in such a manner, as that the buckets on the ascending portion are capable of filling with grain, while on the descending portion of the belt, they are reversed, and consequently discharge their contents. Of course this discharge takes place at the summit of the circuit and thus the grain is elevated to the loft required.

The lower circuit of the belt is made to embrace a short drum, attached to a sweep, the upper end being hinged or jointed to a beam of one of the stories above, and by which the same is directed to any heap of grain in a lower story, or swung out of a door, and directed into the grain apartment of a vessel or boat laying along side the mill, and elevated to the loft desired.

The grain having been hoisted in this manner to the cleaning loft, usually the one the next above the grinding loft, is there submitted to a process of beating, scouring and fanning; after which it descends by a canvass conductor by its own gravity to the hopper of the stones, for its principal operation of grinding; from thence it continues to fall in the same way to the bolting loft next below, to undergo the separating of the flour from the bran; from this story it is again elevated to the highest loft in the building, the one the most remote and as secure from the dust of the other operations as possible, to be submitted to the cooling process; where it is dicharged at the outward rim of a circular platform, some forty or fifty feet in diameter, and where, by the sweep of revolving brushes, whose tendency is to concentrate the flour towards the eye of the cooler, at the centre of the platform, being at the same time carried around in the direction of the sweep, is spread over a vast surface, every particle of which having to travel many thousand feet in its circuitous convolutions, to the centre and eye of the cooler; from which it again descends through a conductor, passing several lofts, to the packing room upon the lower floor, entirely relieved of its heat, previously absorbed from the friction of the stones in grinding, and is there weighed and packed into barrels, by the aid of a suitable press for that purpose; the top head of the barrel coopered in, when after being marked and branded, it is fit for transportation and sale.

These establishments are usually built five or six stories high, one or two of which are used for storage, located between the cleaning and cooling lofts.

Every good flouring mill should have a cooling loft, a loft or lofts for storage, a grinding loft, a bolting loft, and a loft for packing, for the purpose of a due regard to cleanliness, (without which no good flour can be made,) and the convenience of moving the grain to the best advantage, through the different processes.

A flour mill is, therefore, a mammoth machine, whose machinery extends through several stories of a building, performing its clock like motion harmoniously, and with astonishing efficiency.

At many of these establishments in our country, several hundred barrels of flour are made and packed daily. A canal boat arriving at Rochester from the west at 12 o'clock of one day, with 1,500 bushels of wheat, has been known to be set forward the next day, having had in the intervening time, its cargo of wheat transferred from the boat to the mill, there manufactured into flour, the same weighed, packed, and delivered back to the boat, in that space of time.

Such is the gigantic perfection of this great work, as left by the hands of *America's greatest mechanic.*

But the grand mill of Oliver Evans, has, in the process of improvements, thrown off in its flight, a host of satellites, in the shape of portable mills for a variety of purposes adapted to the diversified domestic wants of man, such as the horse power mill for secluded farmers in any part of the country, and hand power mills for the pioneer of the west; mills for grinding corn and cob for animals; for paints, medicines, mustard, coffee, &c.

Within the last thirty years, there has been invented and brought into use, numerous other kindred machines for the growth and preparation of grain.

The most important of these is the threshing machine; horses are now made to do the labor which would require 100,000 men, if done in the old way by the flail. Corn shellers, smut machines, fanning mills, hay and straw cutters, vegetable cutters, machines for hulling clover seed, drilling machines, corn planters, machines for sowing grain broad cast, reaping machines, with more or less success, and portable horse power machines, are among other machines so brought out. Such, also, has been the improvement in the plow, (originally a mere tool,) that it has assumed many of the attributes

of a machine; take for instance, a plow furnished with a dynamometer to measure the draft, a regulating clevis to guage the width and depth of the furrow, and a changeable with a right hand, and left hand mould board, and you have what would be called thirty years ago, a machine plow.

In the numerous varieties of plows in use, we now find one adapted to every variety of work to be done by it; we have the side hill, the plain, the subsoil, the sward land, and the cross plow. Forty years ago we had but two general kinds, distinguished and known as the coulter and the bull plow.

At the present time we have in the aggregate of all that are in use, a convenient plow for all purposes to which the varied qualities of our soil, or the diversified surface of the ground may require, and to these we might add if we had time, a long list of other improvements in agricultural and farming implements, which have undergone a corresponding advance, but these do not strictly belong to our subject and we pass them.

Before leaving this branch of our subject, we will notice one other machine only. The water ram has of late years been applied to farming and rural purposes, and should be noticed as among the useful machines of the age. In situations where a small stream of water passes through a farm, the advantages of this hydraulic device may be secured at no great expense, for elevating and conveying a supply of water to the houses, barns, stables and gardens of such farms, and become to them in the fullest extent, what the Croton is to New-York city.

These water rams act upon the percussion principle, by which a very low head of water in the stream may be elevated several hundred feet, and distributed upon the table lands above for the purpose of irrigation, as well as for a supply for the purposes stated; the subject is well worth the attention of agriculturists and persons owning country seats.

Such has been the progress in improvements in machines as applied to one of the great wants of man—food,—alluded to at our commencement.

We now pass to notice the improvements in machinery for architectural construction, embraced under the third general head of our subject, "*shelter.*"

Upon the subject of architecture, there has been a great deal of misapprehension and error palmed off upon the public, which it is our intention in part to correct. How often have we heard it remarked, that we in modern times have retrograded in the knowledge of architecture, taking the position, that inasmuch as we have had no occasion to throw away money in building monumental pyramids, and other massive constructions, that we are unable to grasp with a subject so vast. Is this the case? It may be recollected, that in the re-building of the Merchants' Exchange in the city of New-York, that a few men, aided by a couple of horses and the use of machinery, hauled up from the wharf at the foot of Wall street, those elegant but massive pillars, which now adorn the front of that building; that the same men and horses elevated them into their places in about two hours each.

Had the weight of those pillars been ten times as great, a single horse and less men, could have raised them with equal ease in forty hours each; by which we have the proof that by the use of machinery, which the ancients had no knowledge of, a single horse may be made to elevate a larger mass of building material into place, than we have any account of being used in the construction of those numerous structures of ancient days, found near the river Nile in Egypt, whose magnitude and greatness have so much astonished modern travellers.

Present a demand upon a modern architect, to build in one half the length of time which was taken by the Egyptians to erect those alluded to, and a pyramid of ten times the extent, and each block ten times the weight ever used in a building, and they would engage in it with a force of men not exceeding as one to one hundred employed by the Egyptians, and one half of these would be represented by the steam engine. The facts are, that in the absence of Despots, we have no occasion to imitate their grand follies.

Require of an engineer of the present day to construct an aqueduct forty miles in length, passing through and tunneling mountains, crossing over large streams of water and deep hollows, bringing the waters of a large river to, and distributing the same to the hand of half a million of people, and the work is done; the Croton, like the pure air of Heaven flows for all; too common to be classed among the wonderful things of earth.

That the Greeks, Romans, and Egyptians, at a very early day possessed a deep knowledge in the art of stone cutting, and a high and

correct taste for architectural design, and executed master pieces in this way, all are free to admit. They have been, and ever will be models for our imitation, and they knew very well how to quarry a large block of granite in a mountain, having first levelled a way, placing it upon simple rollers, (a method by which the Astor House might be moved entire, down to Wall-street,) was urged forward to a canal in the vicinity, dug out for the purpose, and then upon a rude raft, float such a piece to the desired point; and then by the force of thousands, again urge it forward on rollers to the place of erection in an unfinished state. At this point after having received a finish, might be elevated into its place in the building by the use of simple wedges; but all this it must be recollected, was accomplished only with immense labor and toil; and hence these remains of enormous structures, may be considered remarkable only on account of the number of days' labor expended upon them, and the number of years taken in their construction.

Their erection was caused by the sanctity of an ancient custom. We cannot admit that their existence had any thing to do with either utility or luxury; they may be regarded as simple monuments of despotism.

Our only object in these remarks has been to refute an unjust denunciation against modern skill, not wishing to underrate the skill, considering the age of the world at the time they were built, which executed such specimens of architecture; but to accord to our cotemporary builders, their just claim to equality in the knowledge of architectural building, and to show their competency if occasion required, to erect even larger buildings, with much superadded elegance and propriety, at an expense of labor not more than the one hundredth part.

Auxiliary to the construction of modern buildings, we have to notice in the progress of improvement, the invention of circular saws, lath mills, machinery for planeing, tongueing and grooving boards. This last named invention is at this moment doing the labor of thousands of men, and paying the assignees of a renewed patent, it is said equal to $3,000 per day. The invention of shingle machines, morticing and tenoning machines, machines for making cornice and other moulding. (A late invention) of brick machines, capable of turning out 30,000 dry bricks per day, in a state fit to be set up immediately into a kiln for burning; (this is also a late invention of great promise.) Machines for making window sash and

blinds; for making white lead and grinding paint. Machines for hammering wrought iron spikes and nails. Machines for cutting wrought iron nails, brads and sparables; machines for making wood screws, or rather iron screws to be used in wood; machines for making wrought iron and brass door butts; machines for making window blind and bell hanging staples. Of this list of machines, it may be said that none have been named in the list of cloth making, which exceed these in efficiency, and many of them are entirely dependent on cam motions for their existence.

There are other machines which enter into the calculation, direct or indirect, resulting in progress in improvement in machinery for architectural construction; a few will be named. Machines for making augers, bitts, gimblets; for making plane irons, of which the steel for the cutting edges are welded at the rate of seven per minute. Such has been the general progress of improvement in machinery under the general head of *shelter*, alluded to at the commencement of our remarks.

There is another class of machines which contribute alike, though indirectly, to the supply of the three great wants before stated, which must claim some notice.

And first of all we name the king of machines, the steam engine; we so call it, inasmuch as by its energies fraternity of motion may be given to all other machines named, and the incomparable agent for locomotive purposes.

In the regular course of lectures given the past winter by the faculty of the American Institute, the subject of the steam engine has been ably presented; and it is not our intention to go into extended remarks here; we propose to state only, in what respects the steam engine has progressed as an economical and useful power.

Since we have been in the habit of calling the steam engine a highly improved and perfect machine, or say within the last ten or fifteen years, this advance has been at least one half in amount; and consists in the following particulars.

The perfect knowledge of working steam at a high pressure, particularly of working steam expansively; the construction, and the proper setting of steam boilers; the use of the blower to supply oxygen for combustion; the choice and proper adaptation of fuel, particularly in the size and quality of coal.

It is known, that but a a few years since, to a first class river boat, it took sixty or seventy cords of pine wood to run them from this city to Albany; now it requires but twelve or fifteen tons of anthracite coal, at about the same cost per ton, as was the cost of wood per cord.

And still, who has not observed the prodigal use, we might say waste of fuel in the elements of combustion, thrown out from the top of a smoke pipe of a steam engine.

We look for further improvements in steam boilers, by which this comparatively small quantity will be reduced yet to one half of the present quantity, and give in proof of this assertion, that it is not an unusual thing to find land engines giving 100 horse power per day, by a consumption of two tons only; estimating a river boat at 350 horse power, continued for eight or nine hours a trip, we should not consume more than seven and a half tons.

We have happily got rid of the shower of sparks at the top of our smoke pipes; the next step in the march of improvement in steam boat engines, is to get rid of the glimner of heated gases, and the green sulphurous blaze at the same point.

Another class of machines in this connection, are the machines for machinists use; that is, machines to make machines with. The most important of which are turning lathes; this is an old invention, but the lathe of fifty or sixty years ago was a hand tool, mostly used by millwrights.

At this time there are at least one hundred varieties of lathes; to these we may name, the invention of machines for drilling, boreing and planeing, of the greatest importance in the construction of heavy machinery, the tooth cutting machine, &c. &c.

Answering to the secondary wants of man, we may mention improvements in machinery used in the art preservative of all arts, printing. Cylinder presses of enormous expedition, embossing presses, book cutting machines, inking machines, card presses, and type making machines; and in a kindred branch, machinery for making paper in a continuous sheet, so conveniently useful for electro telegraphic purposes; paper ruling machines, and machines of great ingenuity for writing by the blind; a superb specimen of which, was exhibited at the late fair of the American Institute by Mr. Thurber

of Norwich, Conn. The movements of this machine are exclusively effected by *cam motions.*

A machine of nearly equal ingenuity has been invented, by which zylographic engravings are executed, and machines for making steel pens.

These various improvements have had their due influence, (with other improvements not strictly machines) in giving to the public cheap publications. Books, pamphlets, periodicals and journals, have been multiplied more than a hundred fold within the last fifty years.

Another secondary want of man is, the means of locomotion.

Within twenty years the rapid flight of the railroad car has been to us a novelty, the scream of the steam whistle, new music. If our countrymen cannot claim priority in bringing into existence this grand invention, it is with pride we have it to say, that Oliver Evans first proclaimed, with mathematical accuracy, the feasibility and utility of this mode of locomotion.

The first attempt at locomotive building was successful only, as vehicles of transportation, making but ten or twelve miles the hour. The introduction of the small and many tube boilers, known as Nott's tubelar boilers, aided by the invention of the suction draft, from the escape steam, at once relieved, and regenerated, the lazy ten miles an hour machine, (as at first built,) and gave it a speed of sixty miles an hour; seventy-eight miles have been attained.

The rapid extension of lines of railroads in the United States, and elsewhere, naturally invest the subject of improvements in the superstructure of such roads; the means of producing a supply of railroad bars, of improvements in locomotives, cars, car wheels, trucks, safety breakes, and railroad bridges, with considerations of the highest magnitude.

Improvements in rolling mills for making railroad iron, have very much promoted one of these objects.

In this department there was exhibited, at the late Fair of the American Institute, and for which the highest honors of the Institute was bestowed, superior specimens of railroad bars, showing a very creditable progress in the quality of production of iron for that purpose.

Of the amount of the production of iron of that description in this country, it may be remarked that within the space of three years, fifteen rolling mills, for the manufacture of railroad bars, have been erected; of these, eight are located in Pennsylvania, two in each of the States of Massachusetts, Maryland and New-Jersey, and one in Rhode Island.

The aggregate production of these mills in 1846, was about 75,000 tons, of the value of $5,760,000; the estimated produce of 1847, is 100,000 tons, of the value of $7,600,000, and $10,000,000 in value, is estimated for 1848, from the production of these works already built and in progress of being built.

The beneficial results of producing 10 millions of dollars worth of railroad iron per annum, in this country, can hardly be calculated. It will have a two fold advantage to the public generally, beyond the pecuniary advantages which may enure to the makers of it. For while this amount may in ordinary cases, keep the balance of the trade in our favor, it will at the same time, make an increased market for our great agricultural products, which otherwise would not be realized. This remark is true as it relates to all manufactories and the general use and advantage of machinery in this country; but so large an amount as 10 millions superadded to all others, is an important item.

If this quantity of iron were produced in a foreign country and imported into this, it does not follow that the operatives who produce it would require a single barrel of flour, beef or pork in exchange for it while engaged in its manufacture; on the contrary, (with the exception of years of scarcity by short crops, like the present,) this large sum would be distributed to various interests in Europe; mostly in England.

But produce it here, and nine-tenths of it will go to the miners of coal and iron in Pennsylvania; to the inland carrying trade by rivers, canals and railroads; to the forge and furnace men at the works; to the beef growers in Kentucky and elsewhere; to the pork raisers in Ohio; to the wheat growing States of the west, and to a variety of trades which supply the comforts and wants of the laborious producer of this article; while no other branch will suffer by it excepting our shipping interest, which to a very great extent will be compensated by an increased carrying trade in coals coastwise.

Commercially speaking, ten millions saved in our country is a sum sufficiently large to keep the balance of trade in our favor; for, at a time when the demands of trade shall require that amount per annum more than our other exports in exchange for foreign imports, the *single* circumstance of producing that article will be the cause of preventing a crash in the mercantile community.

We deem it unnecessary to advert to the causes which may have induced so important a branch of business to spring into existence at a single bound; it is sufficient to know, other causes favoring, that where a tolerable knowledge has been attained in any branch, and the same is susceptible of being wrought under the physical energies of the steam engine, and the labor saving power of *machinery*, the high order of mechanical genius and the untiring enterprise of our countrymen, are sufficient for its accomplishment.

It may be suggested that these remarks on the subject of producing railroad bars by machinery, are somewhat foreign to our subject; but we hope to be pardoned in the trespass, for it is entirely pertinent to our subject to show the results of machinery as well as its progress.

Before leaving this branch of our subject, improvements in the means of transportation, we beg to state, that the number of locomotives now daily, and for the most part nightly in use in the United States, exceed 1,000; doing the labor of 500,000 horses. This great change from horse to steam power, has seriously affected sales of leather for harness purposes.

There are several other machines which contribute to the means of transportation which must not be overlooked; also machinery for conveying intelligence of an astounding character. A machine for turning ships' blocks, dead eyes, &c., was invented by Mr. Thomas Blanchard, some years since, and has done good service in the way of ship tackle. The same has been applied to the turning of shoe-lasts, gun-stocks, ox-yokes, and a variety of other articles. It acts upon the principle of transferring from the shape of a model to a duplicate to be turned.

A machine for making horse-shoes has been invented, and others for making horse-nails; the former invented and used to a large extent by Mr. Henry Burden, of Troy, to whose enterprise and ingenuity we are indebted for several useful machines in the manufacture of iron and iron articles.

There is a very ingenious machine for braiding whips, which under the old dispersation of horse power for transportation by wagons, was a very important machine; happily, the black steam pony does not require its use. The whip-makers have suffered with the tanner.

On the subject of intelligence, we notice with unusual pride, a small machine invented by Professor Morse, by which his system of electro telegraph is made perfect. We are glad of the opportunity of paying a merited compliment to the genius of a man whose name will be handed down to future generations side by side with the name of Franklin, and the opportunity also of showing in what respects the merit of the discovery consists. The idea of transmitting intelligence by means of electro magnetism is said to have originated in this country and in Europe at about the same time. Professor Wheatstone proposed a separate magnet, and consequently, a separate circuit for each character to be represented; that is, a wire extending from the negative pole of the battery, the place of beginning, to a magnet at the distant point or place of execution, and there, after forming a helix around the magnet in order to create it, to return back again to the positive pole of the battery.

In this way to represent the twenty-four letters of the alphabet, ten numerals and five or six punctuation marks, it would require forty double wires; or in other words, equal to eighty wires, as now used by Professor Morse, and these so constructed with keys, (similar to music keys,) that each key representing the letters, &c., might be made to act singly at the distant station, in framing the language desired to be transmitted. The principal objection to this plan is its great expense.

Another plan suggested in Europe, was, by producing the deflection of a needle; in the use of the common electrometer, in which a single circuit only was used, (two wires.) but which was attended with many difficulties. The deflection being produced by more or less intensity of magnetism, involved the necessity of a different degree for each sign. Thus, for A, the pointer must move to No. 1 of the dial; B, to No. 2, and so on until all the numbers were exhausted, when he had recourse to a double move; that is, first to one number and then to another, to represent a character. The difficulty and confusion of this plan may easily be imagined. A person must always be on the spot to note the movement of the pointer. If taken correctly and given correctly, well; but if mistakes occur, they cannot

easily be corrected. The process is a slow and tedious one, although not very expensive.

The plan of Professor Morse consists of a single wire, reaching from the starting point to the distant station only. The mature knowledge of that gentleman in this science, suggested eventually, that a good conductor of electricity, (one of the metals,) was only necessary to send out the current to a given point; that the return conductor might be a more imperfect one, as water; or what is equivalent, the moisture of the earth; and that to communicate a sign, it could be done by a single change or transposition of dots and dashes to represent the different characters of the alphabet, &c., and these durably marked upon narrow strips of paper, (before alluded to,) would secure correctness with great expedition. The machine in question is furnished with two rollers, a racket-wheel and weights to operate it, and having a small scribing lever, with a fine rounded point to impress a dot or dash upon the paper while moving from one roller to the other beneath it.

The accompanying magnet is so placed in the machine as that when the circuit is formed with the battery, that it attracts the lever of the scribing point in a manner to bring it down upon the paper; a small spring throws it up, upon suspending the magnet, by breaking the circuit. The forming the circuit is done by dipping a finger-key into a mercury cup by the pressure of the finger, breaking it instantly on lifting the finger.

A sudden, nervous application of the finger makes a dot; holding on upon it an instant, a dash, produced by the movement of the paper under the point. These marks, without ink, are perfectly legible and plain, and the scriber being furnished with three or four points, making a tripple or quadruple set of marks, by which as many copies are given at once. Every possibility of a mistake is thoroughly avoided.

The machine at rest, is held by a small ketch, or dog working into the racket-wheel. When the distant operator commences a communication, he dips the circuit into the mercury cup, charging the magnet at the machine, which attracts one arm of the dog in the catch-wheel, liberating the weights, and putting the paper in motion, when the communication is recorded. If an attendant at the station is present, it is well; if not, just as well. The story is told without an assistant, to be translated into good English, French or Latin

when leisure permits. But it is usual, nevertheless, to have others in attendance, and the machine rings a small bell to give notice.

The great merit of this invention of Professor Morse, consists in dispensing with all the conducting wires but one, by which the cost has been reduced within the convenient reach of individual means. Had no other plan but Professor Wheastone's been discovered, the beautiful phenomena would have been confined to the slow and cautious advance of governments, and its practical advantages would have been retarded and kept buried up for half a century.

The idea of making the earth a part of the circuit, the return conductor, was the discovery of a philosopher, the results of which we have not fully calculated. The proposition a few years since to send along a thought upon a flash of lightning, or of communicating the same in any form by means of electricity, would have been considered a great absurdity—the offspring of unmingled insanity in the proposer.

There are other machines, and improvements in machines, which might be named in the catalogue of machines, auxiliary to the secondary wants of man; but to name them, would be but to reiterate a general progress already noticed in those which have been named, about one hundred in number, which have appeared within the last one hundred years; in the aggregate, they have advanced the objects for which they have been made, at least one hundred fold; and that of all that has been named, at least *one-half* are wholly dependant upon *cam motions* for their existence and operation.

This being the case, no farther argument is necessary to prove the important bearings and usefulness of the cam motion in the construction of labor-saving machinery.

But the question may arise in some minds, what is a cam? what does it look like? by what feature shall we distinguish it, when we view it in a machine?

How is it, that people in general know so little about it? is not the term a vulgarism?

The only answer we can give to the inquiry, is, that the name is of course a technical term, to express a part in the construction of machines; that the word occurs of a necessity, in a minute description of machinery, and may be met with in vocabularies of mechanical terms; but that a critical definition of the word, does not exist in

any standard dictionary of the age, and hence the word no doubt has a strange sound to well educated ears.

To illustrate the peculiarities of the cam, models and drawings would be necessary, to make it clear to unmechanical minds; and a full explanation of their qualities cannot, therefore, be given in an essay upon the subject; we, however, propose, in concluding our remarks, to give at some length, the definition of the *cam*, in language which best accords with our views of the subject.

A cam is a revolving piece or part in machinery, the qualities of which give varied motions to separate or combined parts of the same.

Cams are of two general kinds, denominated eccentric and transverse—indicated by the mode in which they act, whether eccentrically to their axis, or transversely thereto; and these kinds are subdivided into *open*, grooved, and yoked cams, possessing in some respects qualities common to each.

Open cams are applied to levers vibrating eccentrically or transversely to their planes of motion, and are usually held thereto by the weight of the lever, or by a spring against the lever to insure continual contact with the same.

Yoked cams are always made in a regular circular form, whose axis deviates more or less from the centre, and being circular may be yoked to a vibrating bar by boxes around the circumference; they are of the kind called eccentric only, and present the cam in its most simple form, being but one remove from the crank, producing a regular reciprocating movement.

Grooved cams have a more extensive signification and application to the arts; they are both eccentric and transverse, and have simple continuous grooves, in a line deviating or direct, or compound and palmated grooves, branching into different avenues, but tending to the place of beginning—the direction, in some cases, being given by sliding switches at the junction of such branches. No arbitrary or fixed plan can be given to a cam, to distinguish its elements of motion; the deviation of their course is subject to the motions required in their use, and wholly dictated by circumstances; their course, like the plot of a land surveyor, may be in angles, more or less zig-zag, in curves or in straight lines, giving varied and different movements, or suspended action to their cam levers.

All cams, when formed, are connected with their fellow levers by cam-pins working into their grooves, or otherwise yoked to, or applied against them, to give alternating or vibrating motions to the same.

A prominent feature in cams proper, is that they have an independent continuous movement in their action, from which primary motions are derived independent of second causes, excepting the driving power communicated through their axles.

Other mechanical devices, acting similarly, but not possessing this continuous quality, are merely auxiliary means within the range of mechanical contrivance, to effect required motions, to which no general appellation or name can be given.

We will notice two modes of acquiring motion, well known to mechanics, to illustrate the point in question.

First.—To a body moving in a circular or straight line, we attach a lever by a pivot pin; place parallel therewith a stationary piece, having a groove formed in the face of it, deviating from such circuit or plane of the moving body; connect such groove and the end of such lever together by a pin working in the groove, and varied and compound motion will be given to such lever, by the action of such body and the deviating course of the groove in the stationary piece—the action of which will resemble and be of the character and effect of a cam; but acting from borrowed motion only, is secondary in its character, and can only be denominated a stationary guide-piece to the lever, and therefore is not a cam.

Second.—Form a groove, deviating more or less from the plane of motion of a body which moves in a straight line, or through the section of a circle, but reciprocating back and forward; connect therewith, by a pivot pin working in the groove, a vibrating lever whose centre is stationary; upon motion being given to such body, in the manner named, vibrations are effected upon the lever, and produce such motions as are indicated by the formation of the groove, and partake in some respects of the qualities of cam motions, but being borrowed and secondary, possess no distinctive trait, by which to give such body a proper name, and are in all respects like the first described, only reversed; that is, they are moving guide-pieces to stationary levers, instead of stationary guide-pieces to moving levers; the first being compound, and the second simple in action.

The article called a cam has become a familiar name to a modern machinist, to express a *facility device* or thing, in the construction of various machines of the utmost importance to their existence, effecting and performing the manipulations of the human hand in giving expeditious action to the same; and by the aid of which have started into being, in this country and in Europe, machines which perform an amount of labor, estimated equal to that of six millions of men; or, in other words, the withdrawing of which device from such machinery, would put a stop to their motions, and in many of them no other movement, or facility could be substituted in their place.

With this auxiliary to mechanical invention we overleap time and space, as it relates to the slow system of apprenticeship in trades, as practiced by our forefathers; for with a full knowledge of the qualities and combinations of the cam, a mechanical engineer is never at a loss for any motion required in the execution of his projected machine. He can sit down and draft a plan of a machine having, if need be, fifty distinct motions, in the space of a single week, and in the farther space of a few weeks more, have a machine built and put in operation, which will be capable of turning out a better and more uniform article, than can possibly be done by an apprentice to the trade, after a seven years apprenticeship; and having perhaps the farther advantage of making 50 or 100 to one over the hand method of doing it. Cams may, therefore, be called America's "apprentice boys."

An article whose importance is of such magnitude, possessing such general traits of character—traits as easily recognised by the practical machinist as those of the screw, wedge, lever, or wheel, should also have a name and a place in our dictionaries corresponding with its vast importance. No standard work has given to it a critical definition and meaning. Dr. Ure has omitted it entirely in his valuable dictionary of the arts, notwithstanding he makes use of the word probably five hundred times, in the description of machines contained in the work itself; and the desire appears to be universal among the better informed mechanics of this country, to see it placed and properly defined on the pages of some standard dictionary, to be copied in all succeeding time, as the *thing of all work* in the mechanic arts.

We therefore venture the remark, that the cam, well understood, in the hands of American genius, aided by the energeis of the steam

engine, lies at the foundation of great national wealth, and is destined to make this country the greatest manufacturing country in the world; and if she becomes the greatest manufacturing country, as sure as effect follows legitimate cause, she is destined to become the richest and most powerful nation upon the face of the earth.

And we farther remark, that in this remarkable progress in improvements in machines generally, the American Institute has contributed during the period of its existence, very largely for the encouragement of labor saving machinery.

The number of new machines, and improvement on machines, exhibited at its fairs, have been variously from fifty to two hundred per annum; and it may be said, without the fear of contradiction, that the amount of good which that institution is like to accomplish by such encouragement, is beyond the power of man to estimate.

And finally we remark, that inasmuch as it is necessary that a large amount of manufacturing must be done in this country, to consume and dispose of our vast agricultural products, and if done at all must be done cheaply, with the aid of machinery. The farmer and land owner of all others, have the deepest interest in the advancement and progress of machinery; that in proportion to their advance, by which the competition of cheap labor in Europe is overcome, will be the advance in value of land property; and therefore this intimate and mutual relation between agriculture and mechanic arts should be well understood by the law makers of our National and State governments, that the meritorious inventors of machines and other improvements, may be properly and strongly encouraged by fostering, and just laws.

REPORT

Of the Committee on Trinity Church Organ.

We, the undersigned, committee appointed to inspect the new organ erected in Trinity Church, by Mr. H. Erben, of the city of New-York, beg to report:

The duty of the committee has been a most agreeable one, and they have to congratulate the inhabitants of New-York on possessing such a splendid specimen of the mechanical arts, and an instrument of such purity of tone.

The great organ stops are individually of great beauty and excellence, the quality of the diapasons in particular, (which are the most difficult stops to *voice* in the whole instrument,) are equal to any European organ that your committee are acquainted with, and superior to any in this country that has yet come under our notice. But a want of judgment is evident, in the amount of mixture stops, viz: in the preponderance of the four rank furniture stops, which gives a screaming effect to the full organ, which, was it not for the power of tone of the diapasons, would be entirely spoiled. This, a fault not belonging in particular to this instrument, but existing more or less in most modern organs, and your committee cannot leave this subject without recommending that great care ought to be taken not to destroy the beauty of the pure tone for the sake of a *mere noise*.

The choir organ is in all respects most excellent, every note clear, beautifully voiced, and the clarionet and bassoon, without exception, the best we hav⁄ ever heard.

The swell is in every way admirable, each stop individually excellent, and the effect of the full swell, grand and imposing in the extreme, and the double dulciana bass balances the light stops well.

Your committee cannot too highly praise the double diapason in the swell, which gives grandeur and force to the entire organ highly effective, and at the same time recommending the adoption of this noble stop in all organs of any considerable size.

The pedal stops are most excellent, firm and sonorous in quality, but your commitee must decidedly object to the thin brass wire pedals which are unpleasant to the foot, and umanageable in every respect, having no quality to recommend them, but their novelty; being an innovation of no possible benefit but of great detriment to a good pedal player. The fact of the notes extending to double C is of inestimable benefit, and your committee hope that for the future the abortive termination at G G pedals, will be exploded.

The coupler stops might with great benefit to the organ, be diminished at least one half, they being of no real value, beyond a certain extent; the octave coupler being decidedly detrimental, the touch being thereby much deterioarated, and the increase of useless expense being great. Though the mechanical execution of this most difficult portion of the organ, reflects unbounded credit both on the skill and invention of the maker, yet we cannot consider any advantage to be derived from such a forest of couples to compensate for the increased expense and trouble; we also most decidedly disapprove of the arrangement of the draw stops, as being calculated to confuse the player by their complicated position, which is entirely at variance with the approved practice of the best makers.

The workmanship of the bellows is excellent; the adoption of percussion valves being of great benefit to the steady pressure of wind.

In conclusion, your committee cannot help expressing their high gratification at the general workmanship of the entire instrument; nothing has been neglected that a liberal policy and exercise of skill could produce.

The organ may fairly be considered an ornament to the industrial arts of America, and though many instruments may excel in the mere number of stops (so called,) yet when the great cubical extent of pipe (the open diapasons on the manuals being throughout of metal, and the pedals to 32 feet C,) is taken into consideration, the organ may with truth deserve the appellation of *grand*.

The reed stops reflect great credit on the maker, and your committee trust, that for the future, the idea of importing reed stops from Europe may be abandoned; the maker of this instrument having proved that in this most arduous branch of his art, we can safely submit to a comparison with any European manufactory.

Mr. Henry Erben is deserving the highest honor that you or any similar institution can confer on him.

(Signed,) GEORGE LODER, *Organist of Grace Church.*
HENRY C. TIMM, " *of the Church of the Messiah.*
H. W. GREATOREX, " *of St. Paul's Church.*
WILLIAM A. KING, " *St. Peter's Church.*
U. C. HILL, *President of the Philharmonic Society.*

NOTE.—Dr. Hodges, the organist of Trinity Church, was, by the contract of the church with Mr. Erben, to plan the instrument; and the several payments by instalments to Mr. Erben, were not to be paid unless by the approbation of Dr. Hodges, as the building of the organ progressed.

REPORT

Of the committee on Roads and Bridges.

On Bishop's Railroad Bridge.

Of Mr. Bishop's Railroad Bridge, the committee are of opinion that Mr. Bishop has introduced a principle in a great degree new in its application to bridges, and which will be attended with economy and other advantages; and they therefore consider his bridge entitled to a favorable notice on the part of the Institute.

On Rider's Iron Railroad Bridge.

Of Mr. Rider's Iron Railroad Bridge, the committee would say, that in their opinion it is of great importance that railroad bridges should be constructed of a less destructible material than wood, and that every effort to obtain that result, is entitled to encouragement. Mr. Rider, in his plan has aimed to effect this object, by a combination of wrought and cast iron, whereby with a limited amount of material the adequate strength is to be obtained. The committee think favorably of the combination, and that for bridges of not too large span, believe that his plan will be found useful; and they therefore recommend a favorable notice on the part of the Institute.

The Russ Pavement.

On the Russ Pavement, the committee are of the opinion that the public are under great obligations to Mr. Horace P. Russ, for the great attention which he has given to the subject of pavements, and for the enterprise and care with which he has brought into use his pavement in our great thoroughfare, Broadway, to a sufficient extent to enable the public to appreciate its value, and for trial to test its durability. As that trial is now going on, and as the effect of a winter and spring can soon be appealed to, the committee deem unnecessary an expression of opinion as to its durability; but they

would be pleased if the Institute would express in a more suitable way, its sense of the service rendered the public by Mr. Russ, in what he has done towards an improvement in the pavement of our streets.

(Signed,) HORATIO ALLEN,
JNO. B JERVIS,
JOHN D. WARD,
Committee.

Mode of Constructing the Russ Pavement.

When the subsoil is graded and ready, a quantity of granite or other mason or quarry chips, each from four to six or eight inches in diameter, and about half that thickness, are to be laid with the flattest side upwards, and rammed down flush with the grading, so as to form an open heading or partial pavement foundation for the next part of the work. This is to be proceeded in as follows:

The positions of the sewers, pipes and branches are defined, and metal or wood frames, thicker at the bottom than the top, laid so as to circumscribe a space or spaces, forming a panel or panels over each sewer pipe and branch beneath, and may be made of sound wood, though common cast iron, or iron-stone pottery, burnt earth, or any other fit material may be used for the frame pieces. Then a proper set of open wooden, shallow vats are to be prepared, for mixing in them what is now well known by the technical name of "*concrete*," namely, a mixture of masons' chips, broken stones, hydraulic cement, clean sand, (not salt beach sand,) and fresh water, in such proportions as the quality of the cement will require to form a sound foundation above the subsoil, that will in a short time become an artificial flag or slab of rock about eight inches thick, to bear the pavements above; but before the mixture is placed into the panels or sections formed by the frames; those panels that may hereafter have to be lifted out for access to the parts beneath, are to have bars of iron laid into them, forming crosses with the holes in them, through which they are to be united by an eye bolt with a ring in the head of each bolt, and in the larger panels two or more of these sets of bars, bolts and rings may be used, while on the smaller panels one will be sufficient. The bolts employed for these purposes may be of a small extra length that will find a place in the subsoil, and a countersink in the face of the concrete is to receive the ring. In this way, on applying power to raise the panel, the ring will lift clear of the face without breakage or injury to the concrete. Then the concrete

is to be filled in and consolidated, after which it may be lifted out of any panel or section as may be needed, by sheers or derricks placed above, with tackels hooked into the rings in the panels; the inverted wedge formed portions of the frames, allowing each panel of cement to be freely lifted out and placed on one side, while access is needed to the parts beneath, and receiving the panel of cement in replacement again when the access beneath is no longer needed.

The gutter stones, curb-stones and flagging of the sidewalks may all be laid on panelled and divided sections of concrete in the same manner, and with the same advantages and effects.

When the concrete foundation is fully consolidated, a pavement of granite or sienite stone blocks, averaging about ten or twelve inches long, four or five inches wide, and a nearly equal depth of about ten inches, are to be carefully laid to an even surface, commencing so as to form the ranges of stones into lozenge formed divisions, by which the edges are presented diagonally to the wheel tires of carriages, or to any other passing weight. The stone over the centre of each section or panel is to have two countersunk holes to receive an inserted lewis by which it may be lifted out, so as to furnish the commencement of a removal to obtain access to the panel beneath. This stone should only be set in clean sand, and all the rest of the stones are to be covered with sand that must be well washed into the interstices between the stones, and then consolidated by a portion of loose grouting, that is, hydraulic cement in a sufficient quantity of water to run freely into the sand and harden between the stones.

The formation of the pavements in diagonal lines with the street, is to be commenced and followed up by placing the first stone of each range so that the side shall form an abutment and tie for the head or fore-end of the first stone in the next range.

The dimensions of the panels or sections and of the paving stones used, may be varied as required.

The firm of Messrs. Russ & Reid, proprietors of the Richmond Granite Quarry, offer to the corporation of the city of New-York, to pave Broadway on the foregoing plan, at the rate of five dollars per square yard.

REPORTS

Of Special Committees of the American Institute.

On Capt. G. W. Taylor's Marine Camels, for lightening vessels over bars, and off shore, when aground.

This invention consists of a series of cylindrical India rubber camels, five feet in length, and six in diameter. These camels are composed of Goodyear's metallic gum elastic, or vulcanized India rubber. This article is not affected by heat or cold, which adds much to the strength and durability of the apparatus. The air-chamber, or interior of the camel is composed of two thicknesses of the strongest canvass, heavily coated with the composition alluded to. Outside of this is a covering of duck, somewhat smaller in diameter than the air-chamber, in order that the latter may not sustain the whole pressure when inflated. Externally to these is an ingenious net-work of ropes, three-quarters of an inch in circumference, which comes to a focus upon one side, like the meridian lines upon a globe. Each of these ropes will sustain the weight of 700 pounds. At the point where they unite, they are attached to a ring; through this ring a five inch rope is passed, which, after being carried under the vessel is made fast to a stancheon on deck. The hose by which these are inflated is of the same material as the camels, than which nothing can be *neater* or *better* adapted to the purpose. These, when properly applied to the vessel, form a perfect cylinder, the end of one camel fitting to the next beyond. The forward one is adapted to the shape of the vessel for reasons obvious.

We believe them fully competent to raise a merchantman of the largest size, or ship of the line, and to float them over bars with about two-thirds of their usual draft, not impeding their progress through the water more than the same additional breadth of beam. One thing which adds materially to the value of this invention is, the simplicity of its arrangement, and the facility with which it may be applied in rough weather. They are inflated simultaneously by means of a force pump; the air passing through a large hose which communicates through the medium of *T-couplings* with each camel.

Each of these couplings are provided with stop-cocks to cut off the communication in case of rupture.

The committee were highly gratified with the experiment this afternoon, and consider the value of the invention as completely settled. The time consumed in adjusting the apparatus under the vessel was a minute and a half to each camel; two of them were inflated in one minute, as timed by the committee. The vessel, measuring 100 tons, was lifted bodily two feet out of the water by means of twelve camels, which was equivalent to being lightened from thirty to thirty-five tons. The committee regard the invention as having an important bearing upon the commercial world, inasmuch as it will open a communication with those ports and places which are now unapproachable on account of bars, shoals, &c.

Another thing not to be forgotten in estimating the value of Capt. Taylor's apparatus, and upon which too much stress cannot be laid, is this: These camels, if placed in the hold of vessels and inflated, are a perfect safe-guard in case of storms at sea; as it is utterly impossible for them to sink while they are thus arranged. If the vessel is dashed in pieces, they still offer the means of escape to the passengers and crew. What an attainment—and what an important *desideratum* for all those who "go down to the sea in ships," and trust themselves and property upon that treacherous element. This is something which the far-famed "Humane Society" never thought of; or if they did, neglected to put in operation, which last supposition we are not quite ready to believe.

The committee furthermore consider the introduction of the invention very opportune in relation to our affairs with Mexico; opening many important Mexican ports to our Navy which are inaccessible without its intervention. Capt. Taylor has done himself much credit by this discovery, and the promptitude with which he has brought it forward at this crisis, and we do heartily commend him to the commercial world, and the favorable consideration of our government.

(Signed) ADONIRAM CHANDLER,
CHAS. W. CHAUNCEY, U. S. N.
ROBERT LAWRENCE,
MARTIN E. THOMPSON,
T. B. WAKEMAN.

New-York, October 24th, 1846.

REPORT

Of the committee appointed to examine the Gas Works of the Manhattan Gas Light Company.

The large new tank house is 188 feet in length, and 92 feet in width, and 47 feet in height. The roof has a span of 92 feet. The tie beams are prevented from sinking by a longitudinal diamond shaped truss. This building contains two tanks, each 84½ feet in diameter, and 20 feet deep, and each capable of holding 860,000 gallons. The iron gas holder nearly finished, is 83 feet in diameter, and 41 feet in height, and will contain 216,000 cubic feet of gas; this is called a telescope gasometer, from being made in two parts, the upper part or joint being of a less diameter than the lower joint, and arranged with a cup at the bottom rim, into which fits a corresponding cup inverted on the upper rim of the lower joint. Upon the gas holders being filled, the upper joint first rises, and as it emerges from the water of the tank, the cup at the bottom rim rises filled with water, hooks into the inverted cup of the lower joint, and in this way makes a water-sealed joint. The advantage of this kind of gasometer is, that capacity is gained by heighth, instead of diameter, an object of importance where the ground is very valuable.

The lightness of the gas holder requires but small counter balances. It is so well adjusted that its own weight affords nearly the requisite regular pressure to the effluent gas to obtain a good light at the burners.

The retort house, which was next submitted to the examination of the committee, by Mr. David C. Colden, the president of the company, is 97 feet long, and 51½ wide, and is to be covered with an iron roof, a part of which is nearly completed. The construction of this roof shows much artistical skill in the general disposition of its component parts, giving great strength, lightness and durability. The

house contains 10 double beds of retorts, worked by 20 furnaces, and is capable of heating and keeping in action 60 retorts. The general construction of these retorts gives ample evidence of the superior talent of the artisan. A very valuable improvement is introduced, in setting these retorts, by the chief engineer of the company, Mr. Charles Roome, to whom great credit is due, for his general design and execution of the whole of these extensive works; and also to William H. Smith, architect and carpenter, Benjamin M. Clark, mason, Jacob Steinert, framer, and Messrs. Mott and Ayers, constructors of the iron roof.

The committee being desirous of not overlooking true merit in any of the laboring classes of society, mention with pleasure the fact, as they are informed, that the numerous laborers employed in the erection of these works, have distinguished themselves for sobriety, industry, and orderly conduct.

The committee are highly gratified to witness the great display of workmanship, in the construction of these works, by *Americans*, showing the very advanced state of the mechanic arts in this country, and that the whole establishment deserves to be ranked among the most magnificent and useful institutions in the United States.

(Signed,) ROBERT LAWRENCE,
GEO. F HOPKINS,
WM. R. COOKE,
N. BLISS.

New-York, October, 1846.

REPORT

Of the committee of Arts and Sciences of the American Institute, on the model of a wooden bridge, submitted by Lowman Gay, of Chili, Monroe county, N. Y.

The committee, after an examination of the model and an investigation of the principles on which its strength is founded, are of opinion that Mr. Gay has reduced the method of spanning large openings by frames of timber, so combined as to remove all lateral thrust, to the utmost simplicity of which it is capable. In the use of this plan therefore, all costly and heavy abutments are rendered unnecessary, while the combination of pieces in the frame presents fewer parts, and those more skilfully adapted to each other and to the strain to which they are subjected, than in any other plan which has come to their knowledge. The mode of combination of the parts composed of wood, aided by a series of iron rods, appears to render the structure incapable of flexure, until its limit of fracture is approached, while, in consequence of the lightness of the structure, that limit will, in large spans, when the weight of the arch itself is the most important disturbing agent, be removed far beyond that of other analogous plans. They are, in consequence, of opinion, that the frame exhibited by Mr. Gay will be capable of spanning with safety, openings of larger extent than any other with which they are acquainted, and of spanning openings of a given extent, at a less cost of material and workmanship.

By order of the committee,

JAS. RENWICK, *Chairman.*

American Institute, June 10th, 1846.

IMPROVED FAN MILL.

Junction, Rensselaer Co., Nov. 23, 1846.

Mr. T. B. Wakeman—Yours of Nov. 1st, informing us that we were awarded the first premium of a silver medal, at the late Fair of the American Institute, for the best fan mill, has been duly received. The required description may be given in a few words.

The mill is the ordinary size and construction, as to the exterior; the interior is a new improvement. It is used to clean all sorts of grain and seed raised in this country. Its cost is, for No. 1, with 7 sieves, 16 by 19 inches, $21; up to $27, for size No. 4, with 7 sieves, 19 by 22 inches.

They are as durable as cotton machinery, with the same care; easy to be repaired. The amount of labor saved is one-half, as it cleans all kinds of grain and seed clean with one operation. It is the only mill known to the inventor, that will take cockle, chess, and smut from wheat, at the same time it is chaffed.

Your ob't servants,

J. T. GRANT & Co.

MANUFACTURE OF UNROTTED HEMP.

Louisville, February 23, 1847.

Dear Sir—You made an inquiry of me, some time since, in relation to the process of bleaching flax or hemp; believing now, that the necessity of doing so, in the staple, can be obviated, or is rendered unnecessary, I herewith inclose a sample of unrotted hemp, to establish the fact.

I have been engaged with others, for some years, in perfecting machinery that would break and clean unrotted hemp, feeling convinced that if the article could be so obtained, it would prove in cordage, or fabrics, much stronger than that obtained by the uncertain process of either dew or water rotting.

You will find, on examination of the sample herewith sent of unrotted hemp, that it has the singular property of being drawn into a very fine sliver, or fibre; this you can prove, by taking hold of the two ends of the sample, and drawing them until the elongation com-

mences; you can then continue to draw them until the reduction comes down to almost a single fibre. This peculiar property belongs to unrotted hemp alone; and can be accounted for by the starch or gum of the fibre being in a crude or undissolved state. In dew rotted or water rotted hemp, the starch or gum is dissolved and forms a *paste*, which, when dry, cements the fibres together, and prevents their free passage in the drawing frame, unless cut down very fine on the hackle.

By spinning the unrotted hemp into fine yarns, through the simple process of boiling them in soap and water, would give them the appearance of half-bleached linen, and they would be found sufficiently white for the best canvass, made or used in this country or Europe. Surely, such canvass would be found much stronger than that requiring an acid in the bleaching process, or that made from decayed or decaying hemp.

I am convinced that the labor and loss consequent in the preparation by hackling of ordinary hemp, can be entirely avoided by the use of the article we are now preparing; for I believe, that with proper drawing frames, it can be drawn down to a cambric thread, without the intervention of a hackle tooth.

I trust the above statement may so far interest the members of the Institute, as to bring their minds to a consideration of the importance of this staple to our country, for surely, if my views are correct, nothing can arrest the progress of its manufacture, until it displaces, in a great manner, the consumption of cotton in all heavy fabrics at least. It is further interesting to know, that the article can be grown by free labor, and can be produced in every free State in the Union.

Yours, respectfully,

JAMES ANDERSON.

T. B. WAKEMAN, Esq.

NEWELL'S PARAUTOPTIC BANK LOCK.

The committee of the American Institute, to whom was referred the examination of Newell's parautoptic bank lock, report:

That they have given the subject referred to them a careful and attentive investigation, and have received full and complete explanations from the inventor.

They have remarked in the lock a number of important advantages, and in particular very great improvements upon the permutation lock formerly submitted by him to the American Institute. Thus, while it retains all the advantages of the permutation principle, combined with the property that the act of locking sets the slides to the particular arrangement of the bits in the skeleton key, the parts thus set are completely screened from observation, from being reached by false instruments, or from being injured by any violence not sufficient to break the lock to pieces.

Having, in the course of their inquiries, examined the different existing modes in which locks may be picked, forced, or opened by false keys, the committee have come to the conclusion, that the parautoptic lock cannot be opened by any of the methods now practised, unless by a person in possession of the key by which it was locked, in the exact form of combination in which it was used for the purpose, or in the almost impossible case of the bits being adjusted to the skeleton key by accident in that very form. As the chances of such accidental combination range, according to the number of moveable bits, from several thousands to several millions, to one, the committee do not consider that so small a chance of success would ever lead to an attempt to profit by it.

In conclusion, the committee feel warranted in expressing the opinion that, unless methods hitherto unknown or imagined, should be contrived for the specific object, the lock in question may be considered as affording entire and absolute security.

THOS. W HARVEY,
JAS. RENWICK.

American Institute, July 7th, 1816.

DEPARTMENT OF SCIENCE.

REPORT

On Browne's Trees of America.

The committee to whom this volume was referred, availed itself of the opinions of learned citizens, as well as of its own judgment in deciding to recommend the work, not only to the Institute for a premium, but to the public, and the committee also considered the length of time, the labor and expense, the extensive travel and studious researches of the author.

The clear and perspicuous manner in which the subjects are treated, the decided utility of the work, and its mechanical execution, constitute strong recommendations.

This book requires also a supplement which the public press has anticipated as requisite to its perfection; that is, a full account of all the remaining trees and shrubs of America, treated in conformity with the plan already adopted in the published work.

This book deserves to find a place in all the libraries of the country, including those of all our colleges, academies, and district schools, and for our State and county agricultural societies; and it will constitute a valuable premium to be given to the successful competitors in all our agricultural fairs.

H. MEIGS, *Chairman.*

REPORT

Of the Committee on Dr. Ruschenberger's Elements of Geology.

The following report upon the Elements of Geology, prepared for the use of schools, &c., by W. S. W. Ruschenberger, M. D. Surgeon in the U. S. Navy, is respectfully submitted.

This small volume of 235 pages contains a very accurate and comprehensive detail of the system now received among learned geologists, and is also illustrated by numerous good drawings of the several objects most deserving of attention. And it merits public notice for the clear explanations given of the meaning of technical terms, which the learned geologist necessarily employs, but which to the beginner, form a serious difficulty. By these explanations the system is rendered entirely easy to the minds of even very young readers.

He shows, first, the order of the position of the sea, sedimentary formations and plutonic rocks, the latter being the basis and the other two over it.

He then states the evidence, that the basis called *the first Geological Epoch*—is the result of the power of heat, therefore could not, and does not contain any vegetable or animal whatever.

Then the second Epoch, called transition. This layer or stratum contains the first specimens of animal and vegetable life, few in number and kinds; at this epoch the sea covered the greatest part of our globe; very few vertebrated (back bone) animals are found in it.

Third Epoch.—This is called the secondary formation, (the transition being the primary,) succeeding it after a long period of quiet repose. In this third period, the strata of sandstone, of conglom -

rate, (a mixture of pieces of rocks, pebbles cemented together by mineral matter,) clay, calcareous rocks, &c., and masses of coal are found. In these coal beds are found distinct remains of the peculiar vegetables of that period, and in this period remains also of many fishes.

Fourth Epoch.—Now we find the immense mass of vegetation of the third period have become coal, and new sedimentary strata are found; and now begins a curious race of reptiles; fishes resembling those of our period in some respects. Tracks, supposed to be of large birds; enormous frogs, and an increased variety of shells, and more complex vegetable growth.

Fifth Epoch.—Up to this period the earth contains but few and inferior animals. But in this period appeared animals remarkable for size and figure, and in vast numbers; some of the lizard kind of sixty feet in length; one lizard with wings, (the Pterodactyl,) and remains of a species of whale; plants bearing cones; huge reeds; and more perfect shell fish.

Sixth Epoch.—The formation of chalk; more huge lizards.

Seventh Epoch.—Called also the tertiary or third formation, showing the arrangement to be next in order after chalk. Now the seas are much less extensive than before. This tertiary formation is divided into three groups, the older, the middle, and the newer, which Mr. Lyell calls, *Eocene*, the first dawn of existing species; *Miocene*, fewer recent than extinct species; *Pliocene*, more recent than extinct species.

In this seventh formation, we find large quadrupeds similar to the Tapier and the Rhinosceros; they are the Anaplotherium and Paleotherium, Mastodon, Dinotherium; the structure of wood; leaves similar to modern Elms, and the Palms; caves in rocks, containing bones of Bear, Hyena, Wolf, Dog kind, hairy Elephants, Cougar and Cat kind. Megatherium, an animal eighteen feet long and nine feet high; Stag, Horse, Elephant. The boulders or erratic rocks; deep alluviums, full of bones of large thick skinned animals, (Pachydermata); no human bones in any of these seven formations, nor any mark whatever of the existence of man.

Eighth Epoch.—The modern formation, since the last grand convulsion of earth.

Then the earthquakes; atmospheric effects on the earth and its surface; coral works; upheaved strata; coal measures thus displaced; the injection of fused granite into other rocks; metalliferous veins; the relative ages of the convulsions of the earth.

Dr. Ruschenberger has in this little volume, which is sold for fifty cents, given a just summary of a mass of investigation contained in books which would cost a large sum of money to purchase and some months to read. He has added to it an explanation of all the *hard words used.*

Your committee with much pleasure recommend this highly valuable book to the attention of those who conduct our schools, academies, colleges, &c., as a work excelently calculated to give the first outlines of the very important study of geology to students. Nor do we hesitate to say that all men, except the learned geologists alone, will feel after its perusal, that they have received a great reward for a very small expense of time and money.

(Signed,) JAS. J. MAPES,

February 4th, 1846.

REPORT

On Dr. Ruschenberger's Elements of Ornithology.

I have received the "Elements of Ornithology," prepared for the use of schools and colleges, by W. S. W. Ruschenberger, M. D., and have read the work in compliance with the request of the American Institute, that I should examine and report upon it. I have great pleasure in highly recommending it. I consider the present the very best introduction to that science that I have ever seen, and I might add as full praise to the other works of the series of "Ruschenberger's books of Natural History," as far as I am acquainted with the subjects they relate to.

Dr. Ruschenberger has, in giving this series to the public, rendered a benefit to all seekers after science, as that old and young may profit by the well arranged and valuable information these volumes contain.

(Signed,) JOHN J. AUDUBON.

February 9th, 1846.

OFFICIAL PROCEEDINGS

Of the National Convention of Farmers, Gardeners, and Silk Culturists, held on the 12th, 13th and 16th days of October, 1846, in connection with the 19th Annual Fair of the American Institute.

New-York, October 12, 1846.

In pursuance of the following Circular, addressed to farmers, gardeners and silk culturists throughout the United States, by the managers of the 19th Annual Fair of the American Institute, the Convention assembled this morning at Mechanics Hall, 472 Broadway, New-York.

CIRCULAR.

Sir—One of the most important arrangements embraced in this anniversary celebration of American arts and industry, is the Convention of Farmers, Gardeners, and Silk Culturists, which meet at Mechanics Hall, 472 Broadway, at 11 o'clock, on Monday, the 12th of October, 1846. It is called in conformity to resolutions of previous agricultural conventions, held during the Annual Fairs of this Institute.

It is deemed essential that this great interest should have some general system of action, in order to produce concert in such leading measures as, on consultation and deliberation, may be viewed, by an extensive representation of agriculturists and their friends, expedient. The present condition of agriculture and horticulture, the latest and most useful improvements that have been devised and adopted in different sections of our country, should be brought before this Convention, with suggestion of new ones.

The influence of the tariffs, and other regulations of foreign nations on our domestic labor, on the character, comforts, independence

and prosperity of our agricultural population, will be considered as legitimate subjects of discussion.

A home department of agriculture, so earnestly recommended by Washington, and so long neglected, should obtain the early attention of this Convention, and effective measures taken to press it upon the consideration of the national legislature early at its next session.

The addition of another great staple to our country's resources, constantly in demand in all the great markets of the world, and calculated to produce a wholesome influence in our balances of trade with other nations, may be realized in silk. The means of removing the obstacles to its rapid growth, by suitable encouragement to sustain it in its infancy against foreign competition, and at the same time promote its home manufacture, a sure and healthy mode of stimulating its extended growth, afford subjects that demand the best reflections of our wisest political economists. Nature has fitted America for a great silk country. Capital, labor and skill, judiciously directed and applied, cannot fail soon to place it high on the catalogue of our richest staples.

As friends of agriculture and horticulture, and of the silk culture in particular, whether engaged directly or indirectly in these important branches of industry or not, we respectfully invite you to come with your friends to the celebration, and we ask you to take part in the deliberations of the Convention.

We will promise you rich treats in our cattle shows, plowing exhibitions, displays of the productions of the farm and garden in unsurpassed vegetables, fruits and flowers, and the finest specimens of the factory and workshop in almost numberless variety. In the various addresses, from time to time during the fair, from some of our most distinguished scholars and statesmen, will be furnished an almost continued feast of reason for those who seek intellectual enjoyment. Every American citizen has a most noble duty to perform on this great continent where Heaven has placed us. We are to make it, if possible, a greater scene of earthly happiness than has ever yet been vouchsafed to mankind. Let us do every thing to beautify, to enrich it, and to render it in civilization and the arts the admired of all nations.

On behalf of the Managers,

T. B. WAKEMAN,

Corresponding Secretary.

P. S. The "*Van Schaick Premium*" of 1000 dollars, generously given by Myndert Van Schaick, Esq., of this city, to be bestowed by the American Institute in premiums of $100, for ten successive years, will be awarded as follows:

For the best piece of silk stuff, 27 inches in width and 60 yards in length, manufactured in the United States within the year, from native silk, $50.

For the best and greatest quantity of American silk, uniformly reeled, not less than 20 pounds, $20.

For the best sewings, of any color, made entirely from American silk, not less than 10 lbs., $10.

For the best peanut cocoons, not less than one bushel, $10. And to each of the successful competitors the "Van Schaick Medal." Other premiums on silk will be bestowed, as usual, by the Institute. All silk culturists and manufacturers are invited to send their specimens as early as the 1st, 2d or 3d of October.

There were many delegates from other states, and a large number from New-York in attendance.

On motion, Gen. H. A. S. Dearborn, of Massachusetts, was appointed temporary Chairman, and Mr. D. J. Browne was chosen Secretary, *pro tempore.*

On motion of Col. Clark, a committee, consisting of Messrs. Lawrence, Wakeman and Meigs, was appointed to nominate officers for the Convention.

By request, the names of delegates present were handed to the secretary.

During the absence of this committee, the chairman,

Gen. Dearborn, rose and said, "I feel much honored by the station in which you have placed me. It is no ordinary compliment to be selected to preside over so important a body as this Convention. I felt that I was especially honored when I entered this hall, devoted as it is to the improvement and elevation of American mechanics. I cannot but feel proud of the country and city whose laboring men enjoy such advantages; here the poor apprentice has the knowledge of the past and of the present within his reach; books and lectures are in his hands and before his mind. It is only within the

last half century that philosophy has descended from lofty college halls to dwell with the poor mechanic. A few years since her inestimable treasures were locked up in high priced books, or more effectually shut out from the common scholar by being written in the Latin and Greek languages. It is within our day that that great dictionary of nature, Newton's Principia, was first translated from its original Latin into English. When Nathaniel Bowditch, one of the greatest men in this country, was a poor boy, he got hold of a long desired copy of the Principia. To his great disappointment, it was written in Latin, of which he was perfectly ignorant. Undismayed by the gloomy prospect, he procured a Latin dictionary and, without grammar or lessons, labored through the whole of Newton's work; read understandingly the immutable laws of nature there laid down; and after that he could read any Latin book. Thus did our indomitable American boy toil up the hill of science, and as an astronomer ranked before his death next the great La Place. When La Place began to publish his remarkable work 'Mechanique Celeste,' the Edinburgh professors said there were not more than nine men in England who could read it understandingly. What did our Bowditch do? He not only read it, but translated it into English, and gave us, *pari passu* with the author, a complete version of that voluminous work. He corresponded with La Place and other learned men of Europe continually, and the last work that he performed on his sick bed, was to correct the last proof sheets of La Place's mighty work, to which he had added several thousand valuable notes and illustrations. He went to his grave the first astronomer in America, almost the first in the world. This was but one specimen of the versatility of his talent; this was what a poor boy could do, and what many a boy of this city can do by the aid of such libraries and halls as they have here. I therefore, feel proud to stand in Mechanics Hall, devoted as it is to the mechanic and scientific interests. But this is a Convention of farmers, gardeners and silk culturists, each interest represented by men prominent in their respective vocations." General D. rapidly sketched the early history of agriculture, spoke of the quadrupeds, birds and insects made subject to man, of which the dog only had become his friend; of the settlement of new lands, the importance of corn and wine, the value of silks, &c., &c.

The committee to nominate officers, returned and reported as follows: For President, H. A. S. Dearborn, of Roxbury, Mass.; for Vice Presidents, John Ogden, of Newark, N. J., and A. P. Byram,

of Kentucky; for Secretaries, T. C. Munn, of Orange, N. J., and D. J. Browne of Brooklyn, Long Island.

On motion, the report was accepted and the officers appointed.

On motion of Mr. T. B. Wakeman, Dr. Underhill, of Westchester county, N. Y., Dr. L. A. Smith, of Essex county, N. J., Jenison G. Ward, of Montgomery county, N. Y., Henry Meigs, of New-York city, and Dr. H. A. Field, of Dutchess county, N. Y., were appointed a committee to prepare business for the action of the Convention.

Mr. James Darrach, of Orange county, N. Y., read a memorial on the subject of agricultural education, addressed to the national convention of farmers, gardeners and silk culturists, held in the city of New-York, at the call of the American Institute, October 12, 1846.

Mr. President and Gentlemen of the Convention:—

By resolution and appointment of an association of farmers, citizens of Orange county, in this State, for the promotion of agricultural education, James Darrach, Samuel Wait, jr., and Lindley Murray Ferris, appear to present the following memorial, which we beg leave now to submit:—

The necessity for any education grows out of the duties which man has to perform and the exigencies to which he is subject in their performance. Their peculiar character determines its extent. Omitting the equal constant relative ones of social life, the unequal and varying duties and exigencies of the arts and professions require an unequal extent and varying character of education. He that pursues an art whose materials are simple and always under like conditions, requires a less extent of education than he who pursues an art whose materials are complex and under varying conditions; and thus in proportion to that complexity and range of conditions.

Applying these simple truths to the farmer, we arrive at once to the most cogent proof that he requires an extent of education unsurpassed by any other profession. Soil, gaseous compounds and their products, his materials, are the most complex. Light, heat, electricity, moisture, his conditions, are the most susceptible and variable; whilst both materials and conditions are alike betimes subjects and lords of that inscrutable power, vitality.

It is not now necessary to draw upon the other fruitful sources of evidence to establish the necessity which the farmer has for a large

extent of knowledge in science. Strange as it may appear, it is not more untrue that this necessity is less felt than in any other profession. It is not only not acknowledged by the farmer, but an unnatural antagonism exists between him and science. Sneering at "book farming," as he denominates science, he rejects it as his guide, either entire or in part. The son destined to merchandize, mechanics, or a learned profession, enjoys from his liberal bounty the advantage of the schools which they have established; while that one whose destiny is to breathe the health-giving fragrance of the freshly-turned sod, graduates at the district school.

Laudable attempts have been made to destroy this antagonism. Writers have divested science of her peculiar and appropriate language, clothed her reasonings in more familiar phrase, displayed her beauties and proclaimed her triumphs. The weekly agricultural column of the country newspapers, the twenty-seven agricultural periodicals issued in nineteen different States, agricultural societies and farmers' clubs, by joint diffusion of the knowledge of results obtained, have struck it a mighty blow. It has been weakened but not destroyed! It has been cowed into silence! but it still lives, though seldom manifested other than by positive or negative action. Until it is rooted up and cast into the fire of public shame, our American agriculture will be slow in its improvements, and her interests long remain the prey of the demagogue and the neglect of our legislatures.

Can it be destroyed? It can! To accomplish this good end, correct and definite views of an agricultural education must be obtained and diffused, the institutions for affording such education established and sustained.

Those who have not paid attention to prevailing notions of an agricultural education, may not be aware how incongruous, crude and indefinite is their character. To give a just impression, it will not be necessary to bring specimens for description from their multitudinous species, genera and orders. They may be arranged under two classes. The classic description of one is, that all the professional education a farmer needs can be only acquired at the tail of the plow, the nib of the scythe and the staff of the flail. Of the other, that the pursuits of the laboratory, and the studies of the museum are the only and sufficient requisites. Into one or the other of these the individuals of the mass may be resolved. Illustrations to the Convention of their error is deemed useless. To those possessing any

just views of the requirements of agriculture they are both evidently wrong. For it may be asked, if they are wrong, what are right notions?

In answer we would reply, we have come to this convention to ask of its wisdom an answer to that question, and also of its adjunct. By what mode shall facilities for the attainment of an agricultural education be offered?

In asking these questions, however, it becomes us to state the views at which the association we represent has arrived, after a careful examination of the character and modes by which a professional education is obtained in other arts and professions, and otherwise.

In commerce, in mechanics, in engineering, in teaching, in law, in medicine, in theology, it was found to be contemporaneous instruction in the practice and sciences belonging to each, subsequent to a proper preparative course of elementary and disciplinary education.

The application of this universally adopted principle is met at the outset with a difficulty which at first seems insuperable. It exists in difference of circumstances. The future merchants and mechanics are sufficiently numerous in large villages and cities to sustain schools and lectures, upon which they could attend during intervals of release from practical duties. The future divines, while enjoying instruction at their seminaries, find opportunities to practice at the social meetings of the pious as well as in the exercise of their schools. The future lawyers, while fulfilling the duties of the office, embrace the exercises of their courts and the fruitful advantages of the hall of justice. The future physicians, gathered at their colleges, collect and study the precepts, principles and experience of their profession, whilst they enjoy the clinics of their private instructors or a hospital. The future farmers have no such advantages. Their practical instruction requires the farm and the farmer. Their theoretic the instructor in agricultural science. There is no common centre where the expense of this education could be divided among a company of fellow students.

Upon this view of the difference of circumstances, the plan of gathering a sufficient number for the support of scientific instruction upon a single farm was examined and abandoned, it being supposed upon any ordinary sized farm as insufficient to afford necessary op-

portunities for practical education. It seemed impossible to adopt the principles of contemporaneous instruction, so far as regarded the union of the theory, economy and practice of farming.

The suggestion at last arose, that in districts where farms were of moderate size and the farmers generally of superior character, pursuing a mixed husbandry, they might be united in an association, under proper regulations, to receive and become practical instructors, each to a few young men, in the practical duties and economy of the farm, who collectively might be able to sustain a school in the sciences relating thereto.

This suggestion was carried out last March, in the establishment of the "Orange County Scientific and Practical Agricultural Institute," and is more fully illustrated in the following extracts from their announcement:—

"We, the undersigned, present to the favorable consideration of the public a short detail of the plan of this Institute, recently organized by a number of exemplary farmers residing in the same neighborhood, some explanation of which is embodied in the following extract from the written agreement:—

"'I, James Darrach, of the town of Montgomery, county of Orange, and State of New-York, farmer, do hereby covenant and agree to give to the pupils all necessary scientific instruction in practical agriculture, by lectures, instructions and examinations, in such way as will most conduce to advance them in thorough knowledge of all the theoretic part of the business. And we, whose names are hereunto subscribed, agree, with said James Darrach, that we, and each of us, will receive into our families the number of pupils mentioned opposite our names, and instruct them to the full extent of our power in all the practical branches of agriculture and the manual operations of the same, and also watch over their morals and habits, in the same manner that we would our own children for their permanent good.'

"The character of this plan presents highly important claims to the favorable consideration of parents and pupils.

"The difficulty in any course of practical agricultural education, in institutions where the teachers and scholars occupy and are confined to a single farm, is that nearly the whole practical economy of the farm, in the house and in the fields, must necessarily be omitted;

and thus the pupil may be taught the art of farming, but those economical details which make the business profitable as well as pleasant, must afterwards be learned by the expensive teacher——experience."

Our plan, on the contrary, places the pupil in the hands of good practical farmers, whose living and happiness are at stake in the successful prosecution of their business.

With them, economy and methodical arrangement are necessary and important elements of success. Consequently this branch of the business will be taught precisely in the same manner in which it will have subsequently to be performed by the pupils themselves, if they should follow the business. While we dwell with confidence upon the peculiar advantages of these considerations, we offer equal inducements in regard to scientific instruction.

His course of instruction, while it is mainly directed in its application to agriculture, will embrace most of the academic studies, so that a thorough English education may be proceeding at the same time.

Among the branches which will receive particular attention may be enumerated the elements of the natural sciences, and the application to agriculture, vegetable and animal physiology, mathematics, natural and moral philosophy.

So far as the experience of six months will enable us to judge, the only remaining obstacles to complete success, independent of those arising from want of proper endowments, are such as are common to any plan to accomplish such education. These are the antagonisms between the farmer and science, erroneous notions of its nature, and the opinion that the experience and practice of one district was of no use in another where a different kind of crop was grown.

A purely professional education of the farmer, consisting not only in practical skill and all the elements of science, but also in the application of its developments to the great phenomena of life, require the same preparative studies as medicine or any other profession.

Its own acquirements are of a high character; a knowledge of the laws and accounts of trade, of the mechanical principles and skilful use of machinery and implements, the study of vegetable and animal

physiology, of rocks, soils, atmosphere, water, the imponderable agents and decomposing organisms; also their applications, actions and transmutations, under or destitute of vitality. In a word, a knowledge of the commerce, geoponics, genomia, zoonomia, hydrology, and chemistry of agriculture, with facility in examining and making their records. This profession, then, like others, demands the same preparative of instruction. It is impossible to except anything from the course but the dead languages; but though these are excepted, they must ever be deemed as the aids and polish of an education which may be acquired without them.

The general attainments of youth contemplating the pursuits of agriculture, demand that instructions for their benefit should be both preparative and professional. The amount of acquirement requisite for admission to such institutions should be good attainments in the rudiments of an English education, including a thorough acquaintance with arithmetic, grammar and geography. The age, with rare exceptions, should not be under fifteen years.

As already remarked, we appear here as delegates to ask your investigation of the broad subject of agricultural education.

If the views presented, the result of two years' investigation, are correct, the association we represent would respectfully urge their sanction by the convention in some suitable manner; but if not, that such views should be expressed as may be the result of deliberations due to the importance of the subject.

But whether correct or not, they would further call your attention to the want of proper institutions, with proper endowments.

The influence of existing preparative institutions is thrown towards other pursuits, yet there are no means of favor for us as farmers. Ancient Yale has just established an agricultural professorship, from which we would fain augur something for the advancement of agricultural science; other colleges are examining the signs in its firmament.

Theology dots the land with her seminaries, law-schools gather around the purlieus of our courts; medicine every winter gathers her 1000 students in a sister city, and in fair proportion where clinical and other instructions are offered; commerce and mechanics meet us on every hand with their libraries, their institutes, and their lectures.

The noble hall in which you are assembled, is dedicated to the latter. Where are corresponding advantages for our profession? Where is the professional school for the farmer? We commit no fraud upon others by using the word profession. Agriculture is a profession. Its high requirements of science, and such action of the convention as its interests demand, will ere long entitle it to the appellative of "learned profession." We repeat the question—Where is the professional school for the farmer? Where? Let it be asked aloud, till the sound of it reaches the south, and west, and north; till echo rolls back from the Green and Rocky Mountains, the empty sound. Let the convention repeat it, and repeat it, till a voice from every State answering "here," shall drown echo's wearisome reply.

From this State three infant voices have reached our ears. During last spring the public prints announced that an agricultural school would be opened in the western part of this State upon the farm of Gen Harmon; another in Dutchess county, upon the farm of John Wilkinson, Esq., and under his care; the third in Orange county, as has been already noticed. In Franklin College, Tennessee, some attention is paid to agriculture, and it appears by public announcement that James Gowen, Esq., of Philadelphia, has purchased a property near his farm at Mount Airy, with the view of establishing an agricultural college.

It is worthy of remark, that these five, and so far as we are informed, only efforts, have been made by private individuals, with the exception, perhaps, of the Orange County Institute—single-handed enterprise. Of the Orange County Institute it is only proper for us to say, it is in its earliest stage of growth, now six months old, with five youths in training. Its fruit cannot be matured so as to have a reflex on its welfare under several years. Eighteen months hence, it hopes to present to the friends of American agriculture its first offering at the shrine of science united to practical skill. At present, from the nature of the case, it casts itself upon the public favor, with no other testimonial than personal references as to character and qualifications of its instructors. If worthy, we ask for it the nourishing patronage of American agriculture.

But whether we, or our fellow-laborers succeed or fail in our enterprize, let not, we pray, the great cause of an elevated and liberal professional education for the farmer, stand still, waiting the issue of these feeble efforts. Let its progress be kept onward, and onward, until the American Farmer shall delight his leisure with the writings

of literature and science, be an honored guest within their halls, and be ashamed to seek advocates of his and his brethren's interests at the door of other professions.

We fain hope there will be found in this convention sufficient patriotism, *esprit de corps*, enterprize and energy, to put this noble interest upon a broad and permanent basis.

All which we respectfully submit.

(Signed,) J DARRACH,
SAMUEL WAIT, JR.,
LINDLEY M. FERRIS.

In behalf of the Orange County Association of Farmers for the promotion of Agricultural Education.

Near Walden, Orange Co., N. Y, Oct. 8, 1846.

On motion, the subject was referred to a committee, consisting of Messrs. Meigs, Underhill and Hyde.

Mr. Meigs moved that a committee be appointed to draw up a memorial to Congress, for the establishment of "Washington's Home Department of Agriculture,"—that said committee consist of thirteen, and that the number present have power to proceed with business, which motion was carried, and the following gentlemen named as the committee.

Henry Meigs, of New-York, chairman; A. P. Byram, Brandensburg, Ky.; Moses B. Coe, Newark, N. J.; Martin Ellsworth, East Windsor, Conn.; Judge Tiffany, Fultonville, Montgomery Co , N. Y.; James Darrach, Orange Co., N. Y.; Wm. J. Gilchrist, Saratoga Co., N. Y.; Peter H. Brink, Saugerties, Ulster Co., N. Y.; Jacob D. Van Winkle, Hudson Co., N. J.; Jennison S. Ward, Gloversville, Fulton Co., N. Y.; Dr. L. A. Smith, Essex Co., N. J.; Gen. H. A. S. Dearborn, Roxbury, Mass.; Dr. R. T. Underhill, New-York.

A miscellaneous conversation followed, in which many of the members participated, concerning education, an agricultural department in the general government, value of the dead languages in scientific education, preparing a memorial to Congress, &c., &c., the substance of which will more fully appear in the subsequent reports and speeches.

On motion, the convention adjourned, to meet at the same place, at 11 o'clock the day following.

Tuesday, October 13, 1846.

The convention met pursuant to adjournment, Gen. Dearborn in the chair.

The minutes of the first day's proceedings were read, and after some corrections, approved.

Dr. Underhill, from the committee to prepare business, reported in part as follows:

1. Letters and communications to be read.

2. The memorial from Orange county concerning education, to be taken up.

3. Matters pertaining to the establishment of a department of agriculture in the general government, considered.

4. Investigation of the effects of the gases from burning brick kilns on vegetation.

5. Diseases of the potato.

6. The culture of silk.

7. The culture of native grapes for wine and the table.

There being no communications,

Mr. Meigs, from the committee on Orange county memorial, reported the following preamble and resolutions, which were adopted:

The committee to whom was committed the memorial addressed to this convention from the Orange County Scientific and Practical Agricultural Institute, on the nature of a professional agricultural education and mode of attaining the same, beg leave to report the following preamble and resolutions as justly expressive of the high interest which they take in agricultural education.

Whereas, The relations of science and practical agriculture are by their natures, inseparable, and ought to be united in the person of every American farmer: *And whereas*, contemporaneous instruction in science and practice is the true method of accomplishing a useful agricultural education: *And whereas*, this cannot be accomplished except where opportunities for both scientific instruction and full performance of practical duties in the manipulations and economy of the farm are afforded: *And whereas*, the memorial committed to us presents superior facilities to effect this object, by placing just so many

students as can find sufficient profitable employment upon separate and contiguous farms, with the owners thereof as practical instructors, while at the same time competent scientific instructions are afforded to all by a professor of agricultural science, and teachers of preparative studies: Therefore,

Resolved, This convention approves the plan presented in the memorial, and earnestly recommends its adoption where circumstances will warrant.

Resolved, The Orange County Scientific and Practical Agricultural Institute is worthy the patronage of the public.

And further, *Whereas*, The necessities of this Institute for apparatus and other proper educational appliances are great, and as the gentlemen engaged therein are proper and responsible men, therefore,

Resolved, This convention cordially recommends it to the liberality of the friends of agriculture and education for a share of their bounty, and further commend it as worthy of legislative endowment by the State of New-York.

H. MEIGS, *Chairman.*

Mr. Meigs then reported the following circular and memorial in regard to the Agricultural Bureau, which were adopted:

Report of Committee on Washington's Department for Agriculture, to the National Convention of Farmers, Gardeners and Silk Culturists.

New-York, October 13th, 1846.

The committee of the convention to whom was referred the subject of a memorial to Congress, asking for the establishment of Washington's "*Agricultural Department of Government*,"

Respectfully report: That they have had the same under consideration, and see no reason to alter their judgment; but every reason to again endeavor to enforce that of the preceding conventions. They have considered that General Washington's views on this subject have the same deep and noble character as when he gave them to his country in one of his last messages to Congress. The committee here beg leave to repeat his most memorable words:—

"It will not be doubted, that with reference either to *individual* or

national welfare, agriculture is of primary importance. In proportion as nations advance in population and other circumstances of maturity, this truth becomes more apparent, and renders the cultivation of the soil more and more an object of *public patronage*. Institutions for promoting it grow up, supported by the *public purse—and to what object can it be dedicated with greater propriety?* Among the means which have been applied to this end, none have been attended with greater success than the establishment of boards, composed of proper characters, charged with collecting and diffusing information, and enabled by premiums and small pecuniary aid, to encourage and assist a spirit of *discovery* and *improvement*, by stimulating to *enterprize* and *experiment*, and by drawing to a common centre the results every where of individual skill and observation, and by spreading them thence over the whole nation. Experience, accordingly, has shown that they are very cheap instruments of *immense national benefits.*"

Such was the language of Washington when at the summit of his wisdom!

It is strange indeed, that he should have spoken in vain. Fifty years have passed away since the words were uttered, and nothing has yet been done. Is it because farmers are so attentive to the farm that they have no time to think of this? Is it because farming is a low occupation, to be followed only by men of little knowledge, that the few who engross to themselves science or official distinction, look upon farmers as mere operatives?

Such was not the view of the greatest men of ancient Rome. They, like Washington, held up to glory the cultivation of the soil. Cincinnatus cultivated the land with his own hands, and by that example made it an order of the highest nobility. And Washington, like him, was a farmer, and begged his country to ennoble it by establishing a separate department of government to take charge of it.

Let us see what would be the practical effect of establishing such a department. The public purse would be employed in procuring all the seeds, plants, and animals of use or pleasure, from every part of this globe! It would have the means of doing all this, through the vast multitude of agents it could employ, consisting of the officers of the navy, army, foreign ministers, charges, and consuls; through the aid of captains, supercargoes, and agents of ships in every quarter of the world.

By its power to diffuse these seeds, plants, and animals throughout our land; by its power to send to any farmer that desired it, portions of all these, and the most accurate and authentic accounts of their origin, qualities and modes of production; by establishing such premiums for great agricultural improvements as would produce the very highest competition—by all this, every intelligent farmer would keep his eye upon the department which so deeply concerns his welfare, and would feel himself ennobled by its existence.

The department would employ clerks well acquainted with the agricultural history of all nations. Correspondence would be established with all foreign and domestic agricultural societies. The sovereigns of the old world would communicate with the department, and thus the great landed interest become eminent among all nations, and the eternal truth brought up to the view of all men, that the *glory of nations, their virtue, and their high agriculture, are three inseparable facts!*

H. MEIGS,
Chairman of the committee.

(Signed)—A. P. Byram, *Kentucky.*
Moses B. Coe, *New-Jersey.*
Martin Ellsworth, *Connecticut.*
Isaac H. Tiffany, *Montgomery, N. York.*
James Darrach, *Orange co., N. York.*
Wm. J. Gilchrist, *Saratoga, N. York.*
Peter H. Brink, *Saugerties, N. York.*
Jacob D. Van Winkle, *Bergen, N. J.*
Jenison S. Ward, *Gloversville, N. York*
L. A. Smith, *Essex, N. J.*
H. A. S. Dearborn, *Roxbury, Mass.*
R. T. Underhill, *Croton Point, N. Y.*

MEMORIAL

Of the National Convention of Farmers, Gardeners, and Silk Culturists, held in New-York, October 14th, 1846.

To the Congress of the United States,
On Washington's Department of Agriculture:

The National Convention of Farmers, Gardeners, and Silk Culturists, now in session in the city of New-York, respectfully present the following memorial, unanimously adopted by this convention, viz:

Your memorialists, in common with a large body of the American agriculturists, have, for some time past, deemed it of the highest im-

portance to the agriculture of their country, to carry into execution the views of Washington, as expressed in one of his last messages to Congress, relative to the establishment by government of *a Department for Agriculture.* And we here beg leave to repeat his words:

"It will not be doubted that with reference either to *individual* or *national welfare*, agriculture is of primary importance. In proportion as nations advance in population, and other circumstances of maturity, this truth becomes more apparent, and renders the cultivation of the soil more and more an object of *public patronage.* Institutions for promoting it grow up, supported by the *public purse, and to what object can it be dedicated with greater propriety?* Among the means which have been employed to this end, none have been attended with greater success than the establishment of boards, composed of proper characters, charged with collecting and diffusing information, and enabled by *premiums* and small pecuniary aid, to encourage and assist a spirit of *discovery* and *improvement*, by stimulating to *enterprise* and *experiment*, and by drawing to a common centre the results every where, of individual skill and observation, and by spreading them thence over the whole nation. Experience has accordingly shown that they are very cheap instruments of *immense national benefits.*"

Such was the language of Washington, when at the summit of his wisdom. Yet, strange to say, fifty years have passed away since these words were uttered, and nothing has yet been done.

Is it because farming is a low occupation, unworthy the notice of government? Is it because they are mere operatives, whose interests are below the notice of the government? Such were not the views of the greatest men of ancient Rome. Cincinnatus, like our Washington, was a farmer, and *held up to glory the cultivation of the soil!* Cincinnatus, by his own example, ennobled the farmer, and Washington precisely imitated him.

We most earnestly ask Congress to look at the practical effect of the establishment of *Washington's Department for Agriculture.*

The public purse would then be employed in obtaining all the seeds, all the plants, all the animals, for use and for pleasure, from every part of the globe. The department would have the means, already in existence, of doing all this, through the multitude of agents employed by government, consisting of officers of our army and navy—of consuls, charges, ministers—and would also obtain the aid

of every captain of our vast mercantile marine, and the agents of our immense commerce in every land. And it would have the power not only to concentrate at Washington all these good things, but all manner of accurate information relative to their origin, qualities, and modes of raising and utility; and diffusing all this in the most authentic manner among our farmers. And by establishing appropriate premiums for excellence, in every branch of the farming and gardening pursuits, the highest spirit of emulation would be produced. Such a department would attract the eye of every cultivator, and cause him to feel that noble pride which of right belongs to his inestimable labors. Such a department would employ clerks acquainted with foreign languages—a constant correspondence would ensue between it and all important agricultural societies, and with all the governments of the earth. Its questions would be promptly and authentically answered from China to Great Britain, and from Russia to New-Holland; every facility would be given to the transportation of plants and animals to our country, from all foreign lands.

The sovereigns of Europe would cheerfully lend their aid in all this; for they all feel now, more than has been felt by their predecessors for the last fifteen centuries, the surpassing importance of the *agriculture of the world.* They all feel that the *glory of nations, their virtue*, and their *high agriculture*, are *three inseparable facts!*

HENRY MEIGS, of New-York,
Chairman of the committee.

(Signed)—H. A. S. DEARBORN, *Roxbury, Mass.*
A. P. BYRAM, *Kentucky.*
MOSES B. COE, *New-Jersey.*
MARTIN ELLSWORTH, *Connecticut.*
ISAAC H. TIFFANY, *Montgomery co., N. Y.*
JAMES DARRACH, *Coldenham, Orange co., N. Y.*
WM. J. GILCHRIST, *Saratoga, N. Y.*
PETER H. BRINK, *Saugerties, N. Y.*
JACOB D. VAN WINKLE, *Bergen, N. J.*
JENISON S. WARD, *Gloversville, N. Y.*
DR. L. A. SMITH, *Essex, N. Y.*
DR. R. T. UNDERHILL, *Croton Point.*

(Signed,) H. A. S. DEARBORN,
President of the Convention.

H. P. BYRAM, *of Kentucky,*
JOHN OGDEN, *of Newark, New-Jersey,* } *Vice Presidents.*

J. C. MUNN, *of New-Jersey,*
D. J. BROWNE, *of Brooklyn, L. I.,* } *Secretaries.*

Dr. Underhill (on the call of the 4th subject in the order of business) said, " The subject, though perhaps new to many, has engaged my mind for six years, during which time I have studiously sought for a remedy. My attention was first called to the subject by a gentleman who observed, that after a light shower all his vineyard appeared to be in a sickly condition, an effect just the reverse from what might be anticipated from rain. He thought possibly that the vines had been injured by electric fluid running along the wire which supported them. This reason was not satisfactory, and after some observation I was satisfied that the injury was done by the gases from a neighboring brick kiln. Subsequent observations confirmed this opinion. The effects upon the leaves of trees and plants are much like those of a severe fire; the tender and pendulous portions of the leaves are turned to a redish-brown color, and curl up as if seared by extreme heat. In some instances, spots are, as it were, burned through, as if strong acid had dropped upon them. The cause of this appears to me to arise from the anthracite coal used in making brick. This is used to facilitate their burning; in those nearest the fire only three pecks is put into a thousand bricks, while those on the outside contain twelve bushels per thousand. This is the case in one brick yard, according to the statement made to me by the owner himself. The quantity of coal may vary in different localities, but something near this proportion probably exists in all cases. When the burning is nearly done, the coal on the outside bricks is on fire, and large quantities of carbonic acid gas, sulphuretted hydrogen, carburetted hydrogen, and perhaps a little phosphorated hydrogen, are evolved. These gases, (particularly the last,) are the most active and injurious to vegetation. When the atmosphere is moist, and in foggy weather with a light breeze, their effects are traceable for miles. In some instances you will find the track of a stream from 100 yards to a half a mile in width and several miles in length. If a heavy rain happens at the same time, the effect is less serious; it seems to wash off the injurious gas.

" These injuries occur not only in vineyards, but are observed in forest trees, shrubbery, fruit trees and vegetables. The Newtown pippin is a great sufferer; sometimes its blossoms are destroyed, or if these escape, perhaps so many leaves are ruined that not enough are left to furnish sap for the proper maturity of the fruit, and the apple is small and of poor flavor. I know one very large and fine orchard in Westchester county which has been ruined in this manner. Nor is this a solitary case; hundreds of orchards along the North River have been more or less injured.

"I am aware that I shall raise something of a storm in places where brick making is a business. But after so long studying upon the evil, I do not speak at random, and further, I have something here to corroborate my statements. [Dr. Underhill exhibited several branches of forest and fruit trees which had been touched by these gases, corresponding in appearance to his description.] After this injury by the noxious gases, the plant louse and other insects are more than usually active, and often complete the destruction of the foliage. Where the gas falls upon the leaves of the hickory, it sometimes cuts a hole through the leaf. Pine is quickly destroyed by it, the whole tree being effectually killed. In fact, this deleterious gas injures almost every thing in the vegetable kingdom, and an efficient and immediate remedy is most anxiously desired."

The subject was, on motion, committed to Messrs. Ellsworth, Underhill, Brink, Haight, and Darrach, who will report to the Farmers' Club.

The next business (diseases of potatoes) was taken up, and after some brief remarks from Mr. Ellsworth, of Conn., it was laid on the table for want of time to treat it at length.

The culture of silk then came up, and on motion, Messrs. Van Epps, Hyde, Summy and Byram, were appointed a committee to report at the next meeting.

Some conversation on silk, and in regard to the place for the next meeting was held, and it was

Resolved, That when we adjourn, we adjourn to meet at the Repository of the American Institute in the Park, on Friday, at 10 o'clock, A. M.

The 7th subject (culture of native grapes) then came up, and,

On motion, it was referred to Messrs. Underhill, Meigs and Hall, to report at the next meeting.

The president then read a letter from S. B. Parsons, of Flushing, L. I., recommending the establishment of a botanical garden in Florida, for the acclimation of tropical trees and plants, domesticating of valuable exotics, &c.

Gen. Dearborn gave a brief history of the experiment of a botanic garden made by Dr. Perrine in Florida, during the Seminole

war; spoke briefly of the duty the government owes to the people to advance with all reasonable means such philanthropic objects; of intelligence as the surest basis of freedom; complimented the Parsons family on their stability and intelligence, &c., &c.

The subject was finally referred to a committee, consisting of Messrs. S. B. Parsons, H. A. S. Dearborn, R. L. Pell, Rev. R. R. Gurley, and William Valk, to report at next meeting.

On motion, it was

Resolved, That the American Institute be requested to renew their application to the Legislature of this State for a grant to establish an agricultural college and experimental farm somewhere in the vicinity of New-York.

After considerable desultory conversation, Messrs. Wakeman, Darrach and Chandler, were appointed a committee to carry into effect the foregoing resolution.

There being no further business offered,

On motion, the Convention adjourned, to meet at the Repository of the American Institute on Friday, at 10 o'clock, A. M.

Friday, October 16, 1846.

Third Day.

The Convention met at the Repository of the Institute in the Park, pursuant to adjournment, at 10 o'clock, A. M.

H. A. S. Dearborn, President, called the meeting to order, and D. J. Browne, Secretary, read the minutes of the previous session, which were adopted.

Reports of committees being in order,

Gen. Dearborn, from the committee to whom was referred the subject of a "botanic garden in Florida," read the following report:

Report of the Committee on the establishment of a Botanic Garden in Florida.

The committee to whom was referred the communication of S. B. Parsons, of Flushing, on the "establishment of a botanic garden in Florida, for the acclimation of foreign trees and plants valuable for

their products, or for ornament," respectfully submit the following report:

The great advantages to the whole Union which may be derived from the introduction and culture of the plants of the *tropics*, and of the temperate zones, not indigenous to the United States, which may be rendered subservient to the interests of the mechanical and manufacturing industry of the country, and increase the variety and value of our exports, as well as augment the number and species of fruit and ornamental trees, shrubs and herbaceous plants, by the establishment of an *experimental garden* in the southern extremity of the United States, is a subject worthy the serious consideration of every citizen, and the State and the general governments.

Thus far the cultivators of the soil have been indebted to individual enterprise and liberality for all the vegetable productions which have been introduced from foreign countries, previous to the return of the exploring expedition, so well conducted by Captain Wilkes; and for all the experiments which have been made for the benefit of the numerous departments of native industry, the projectors have been indebted for aid more to individual effort than to legislative enactment. When it is considered that this republic has been so long and efficiently established, that its population has been extended over a vast extent of territory, varied in its climate, products and soil, and that its position has become exalted among the powerful nations of the earth, it is to be presumed that the government will be emulous to afford to all classes of the people as effectual means of a vigorous and rapid progression in the development of all the arts of exalted civilization, as has been secured to the subjects of the most enlightened empires of the Eastern continent.

The sovereigns of France and England have long since founded extensive botanical, experimental and acclimative gardens in their capitals, as well as in the southern extreme of their domains.

The "Jardin des Plantes," of Paris, is justly celebrated; the botanical garden at Montpelier, is of scarcely inferior value, and the horticultural enterprise and energy of the French is farther developing itself in the establishment of an extensive botanic garden in Algiers. From the reigns of Louis XIVth, and Peter the Great, agriculture, horticulture, and botany, have especially claimed the attention of those monarchs. The royal gardens of the French, with those at St. Petersburgh and on the shores of the Crimea, are cele-

brated as seminaries of instruction in most of the branches of natural history, and have been also eminently beneficial to the agricultural and mechanical laborer, and to the commercial consequence of those powerful nations. In order to make them increasingly useful to commerce, science, and the arts, intelligent naturalists have been sent out in the public ships for the express purpose of collecting from every country, plants and seeds that might be advantageously introduced into the field or garden culture of any part of their dominions. The British government, aware of the importance of many new products to the agricultural interests of the country, have for many years given standing orders to its consuls throughout the world, to send home all the plants and seeds, that may in the most distant degree promise to benefit the landed interest of their country. In that country legislative effort has been ably seconded by individual enterprise and interest. The nobles and intelligent commoners, residin in the country upon their ancestral estates, have either individually, or as members of botanical, horticultural or agricultural societies, founded experimental gardens throughout England, Scotland and Ireland, for the laudable purpose of increasing the number, variety, value and beauty of their vegetable productions. So successful have been their commendable exertions, that plantations now exist in the vicinity of London as well as in Paris, whence are disseminated an infinite variety of valuable and ornamental trees and plants, collected from every soil and climate of the earth.

If then England and other European powers are so eminently alive to the benefit likely to occur from the introduction of foreign trees and plants, to their comparatively limited territories, how vast indeed would be the advantage of such establishments in the United States, where is to be found every variety of climate and soil, from Cape Cod to the Pacific, and from the orange groves of Florida to the frozen borders of Lake Superior?

By thus testing the character and hardihood of staple foreign products, the culture of some plant may possibly be introduced, whose product will be as valuable to our national industry as olives to the South of Europe, as coffee and indigo to the tropics, or as cotton to our own country.

The trees and plants of America are so highly appreciated in Europe, that no difficulty would be experienced in establishing a system of exchanges with their experimental gardens.

The favorable disposition of Congress to the foundation of a botanic garden in Florida, has been exhibited by the liberal grant of a large tract of land, with a sufficient sum of money, to Dr. Perrine, several years since, whose efforts were frustrated by his sudden death at the hands of the Indians, just as he had commenced the transplanting of numerous tropical plants which he had procured from Central America and Mexico.

The object of the government in affording encouragement to this undertaking, was thus suddenly frustrated, but it is to be confidently presumed that an equally liberal patronage will be again extended, and in such an efficient manner as to render the realization of this important project as certain as it is desirable. Such an establishment, if situated on the St. John's river, on what must eventually be the principal inland route from New-York to New Orleans, would be an attractive object to travelers; would command the attention of scientific men of our own and foreign countries; and while it arrived at the great object of benefit to the domestic industry of our country, would exhibit to foreigners a convincing evidence that our republican government was fully alive to all that could beneficially affect the wealth and prosperity of its people.

The committee would respectfully recommend the adoption of the following resolutions:

1. *Resolved,* That the American Institute be requested to memorialize Congress to adopt such measures as may be deemed most expedient, for the establishment of a *Botanical and Experimental Garden in Florida, for the Acclimation of Tropical* and other *Foreign Trees and Plants,* and for their distribution among the several States in such a manner as will best subserve the interests of each.

2. *Resolved,* That the American Institute be also requested to correspond with the agricultural, horticultural and botanical societies throughout the United States, on this subject, and ask their vigorous co-operation, by transmitting memorials to Congress of a like import to that designated by the foregoing resolution.

3. *Resolved,* That the Secretaries of this Convention be instructed to transmit a copy of this report to the Corresponding Secretary of the American Institute.

H. A. S. DEARBORN,
L. B. PARSONS,
In behalf of the committee.

Gen. D. made some remarks upon the prospective utility of such a garden, and invited Hon. C. F. Mercer, of Virginia, to address the convention, saying that Gen. Mercer had resided several years in Florida, was conversant with the experiment of Dr. Perrine, and at present cultivated as an amateur an extensive garden in Virginia, of which commonwealth he was one of the ablest statesmen.

Gen. Mercer rose, and said he was deeply indebted for the compliment of the honorable chairman. "I have resided in Florida," said he, "about six years, in every variety of season, and can speak with some certainty of its soil and climate. Though not a constant resident, it has been my home. Florida in point of territory, is the third State of the Union. It extends from 26 degrees to 31 degrees of North latitude, comprising every variety of soil, from the lightest and most barren sands to the richest hammocks, whose fertility is unparalleled. One peculiarity of this State is that its forests never lose their leaves; which perennial verdure, combining with the influence of the Gulf Stream on one coast, and the ocean on both, preserves an equality of temperature unknown to inland regions. Frosts are seldom or never known to injure vegetation in winter. Some instances have occurred near Tallahassee of injury to orange trees by late spring frosts, owing to the proximity of the southern spur of the Alleghanies. Such a country, it will be seen, offers excellent advantages for 'trial farms,' as we in the South call them. Let the great empire state establish there her botanic garden or trial farm, and other States will soon imitate the good example; and in this great southern garden almost all plants may be acclimated or naturalized. We have scarce a single fruit in its natural state. Our splendid apples of two pounds weight came by cultivation from the miserable little crab-apple. Our grapes, of a size and flavor most excellent, came by proper care from a like insignificant parent. These grapes, which in England forty years ago brought four shillings sterling per pound, are now sold for one shilling. Into this great botanical garden, and similar ones in other latitudes, we can introduce valuable native plants from all parts of the world. For instance, the wild rice, rye, and anniseed of Texas; which state, wooded with deciduous trees, mostly an elevated prairie, lying exposed to the cold blasts from the Rocky Mountains, where a change in a few hours of 40 degrees Fahrenheit often occurs—is highly unfavorable to vegetable perfection. Yet the botany of Texas is of the richest description. In regard to a grant of land, I think from the present state of the country, and opinions of our government, little or nothing can be expected from Congress. The influence of States Rights

men, of which Mr. Polk is one, is too powerful. I think this garden would be cheerfully established by private subscription, if the minds of the people were turned to it. As I am about to settle in Kentucky, and shall have no personal interest in the matter, I may perhaps be allowed to advise. Land can be purchased at ten shillings per acre. Let a private subscription be opened (I will give $50 myself) for the purchase of a location, after which $1,000 per annum will defray expenses. Send some of our best German Emigrants there as cultivators; many of whom would be glad to go for the consideration of small farms of their own; to these add a superintendent, whose skill in botany and analagous sciences shall be his recommendation, and the experiment is complete. I have a word or two to say concerning the tariff, knowing that I stand before a tariff audience. After thirty years of public life, during which I steadily and constantly voted against a tariff for protection, I have at last been converted to that doctrine, through the influence of observations made in a trip to New-England, and two voyages to old England. I am glad my experience has induced me to change my views, and do not hesitate to proclaim my new convictions, having no interest for publication or concealment. I hold no public office, never accepted one while in Congress, and would not now accept any, not even the highest within the gift of the government.

"Some time ago I was in Boston, and while I was preparing to leave, my friend Nathan Appleton invited me to visit Lowell. I had an indistinct prejudice against factories and declined his request. He would not be put off, and after long persuasion I consented to go, for I could not well persist in refusing to please one of the principal men in a city where I had been received with such unbounded hospitality. When we arrived at Lowell, I was astonished to see so clean and beautiful a city, and still more so at the wonderful spectacle of 7,000 girls—all pretty girls too—neat, comfortable and happy. They all looked up smilingly as I passed along, but very suddenly looked down again, perhaps not much captivated by what they saw. When I entered the factories, I expected to have all my prejudices against manufactures sustained by occular demonstration; but here I was again most wonderfully astonished to find things orderly and neat; so clean too, that I verily believe I might have swept the floor with my handkerchief without giving it a stain. This remarkable state of things seemed a paradox to me, effectually annihilating my long cherished prejudices against home manufactures, and converting me to the doctrines of the American system.

About forty years ago I was in England, and while there, visited Manchester, Stockport, Birmingham and other places, for the purpose of knowing the state of society there. It was astonishing to me how human beings could exist in a condition so miserable—three or four families huddled into a damp basement, more like hogs than men. From comparisons made of the expense of manufacturing in England and America, I am confident that we can make goods here with less expense than they can in England. They have no water power—we have it unlimited; they pay a great price for transporting coal to their factories—we scarcely anything; their *primum mobile* is steam—ours water; their laborers are ignorant and wretched—ours enlightened and happy; their market is abroad—ours at home. I therefore conclude that a moderate protection to our manufactures will soon establish them on a basis which will be too firm for overthrow by casual chances. I do not consider it always true that every one is the best judge of the manner in which he should employ his capital and labor; as those affirm who cry out against all laws restricting and regulating trade. The great fault of our government is not in the enactment of tariffs and revenue laws, but in the facility with which these measures are changed. Perhaps I, who so lately changed my views, ought not to talk of instability; but in sixty years of active life, one finds many opportunities for change, if not so many for improved opinions. All are familiar with the change of Daniel Webster on the tariff, and of Henry Clay on the national bank, and no one presumes that other than honest convictions prompted those great men to reverse their judgments. The very first memorial presented to Congress in favor of protection to our manufactures, came from Charleston, South-Carolina, and was supported by Mr. Calhoun. In the unsettled times of Jefferson and Madison, most of our southern men were in favor of establishing domestic manufactures. Then we had embargoes and prohibitions, and double duties during the war. At its close we went back to a comparatively low tariff, and Monroe had to borrow money to pay government pensioners. The injustice of these frequent changes is manifest. No matter how wise or theoretically good measures of this kind may be—no matter how great an improvement on former laws, if they are often and unexpectedly changed, their effects are injurious; they induce fickleness of purpose, and scepticism among the people—faith in the government is destroyed, and all is doubt and uncertainty. Suppose, in the great operations of nature, such changes should occur; the farmer going forth to plant his spring grain, suddenly finds it to be October instead of April—Michælmas night instead of May-day—how would his faith

be shaken in the Supreme Ruler! Such uncertainty in regard to business our changing government is continually producing, and this instability is the greatest evil of our democratic system. The injustice of those frequent changes, crushing as they do, many young branches of enterprising industry, is too apparent to need elucidation.

After some farther observations upon the opinions of southern men, &c., and excusing his unstudied and discursive remarks, Gen. Mercer sat down, amid hearty applause.

The question on the adoption of the report was then put and carried.

Mr. Meigs remarked that in looking over the proceedings of the Royal Society at Paris, he observed that there had been quite a war of words on this subject of acclimating plants; some contending that it was altogether impracticable, mentioning the potato, which they had possessed nearly three hundred years, as a witness; others considering acclimation perfectly natural and easy. The potato being an annual plant, can be no proper proof for or against acclimation. Mr. Meigs thought acclimation easy, and hoped to see it tried. Many plants, we know, will change their appearance and character by a change of climate.

Col. Clark observed that plants often undergo a material change by transplanting, and mentioned the castor bean, a native of the West-Indies, which, on being transplanted to this climate greatly changes its period of maturity. While up, he would remark, that the injury to vegetation by gases arising from brick kilns, was, he thought, produced by excess of sulphate of alumina in the clay, rather than gases from the coal used. Some clay contains this sulphate in so large quantities that alum has been obtained from it. The gases produced from burning this aluminous clay deprive the atmosphere of moisture, and of course, annihilates one of the greatest supporters of vegetation. The affinity of sulphurous acid gas, for moisture, is very great, and its effects upon vegetation proportionably injurious.

Gen. Dearborn, in regard to acclimation, said that he had picked ripe balls of cotton from plants in his garden in Massachusetts, though this valuable plant is acclimated only as far north as the southern part of Virginia. Sugar cane is a tropic plant, and in the torrid zone it ripens full to the very top, the saccharine matter. It has

been acclimated in Louisiana so that they get three or four feet of saccharine matter if the crop be secured before frost. I doubt not there are in tropical and boreal climates many plants which may be easily and profitably acclimated in our country. We cannot expect any very important new discoveries in the animal and mineral kingdoms; we are intimately acquainted with land animals and minerals; aquatic regions can at best yield us little else than oil; but so extensive and important is the vegetable kingdom, that if all animals, (man excepted,) were destroyed, we should have an abundance left for our sustenance. We know that many of our valuable plants are natives of far distant regions; for instance, the mulberry, which was originally a native of a small province in Southern India; thence it came up the Persian Gulf, through Palmyra, (Solomon's famous Tadmor in the Desert,) passed ruined Babylon and Nineveh, spread over luxurious Persia, came along the Ægean and Mediterranean, and finally reached Rome. A wandering monk, whose pilgrimage had been in the east, brought to Constantinople, in the top of his staff, a few seeds of the mulberry, and eggs of the silk-worm, where (in Europe,) they were first planted. Thence came they to Italy and France. Now look at the immense value of the silk business in those countries. See our valuable animal, the sheep, as it were, put out of countenance by that insignificant worm brought by the wandering monk from far Asia. This is an instance of acclimation. Theoretically I query thus: In India they have a tree and a worm which produces this valuable silk, this gorgeous velvet, this magnificent satin. Can I raise them in Massachusetts? Undoubtedly no, is the response. But they and other valuable products of the opposite zones, may gradually be taught to grow in our climate. This experimental garden we must have; and if we move energetically in the matter, we can have it—we will have it.

Mr. Meigs mentioned, as a singular fact, that the island of Japan would not produce a potato. He said that in Algeria, the French government have an experimental garden in successful operation, in which one may find torrid and frigid plants side by side, a medley of the vegetable kingdom from all parts of the world.

Gen. Mercer said we must not expect too rapid progress in acclimating plants. There is great affinity between the vegetable and animal kingdoms; and of the latter, negroes have been a hundred and fifty years in this country, yet they are not so well acclimated but that they generally feel and thrive better when transported to the burning climate of Africa. The first magnolia grandiflora he ever

saw in Virginia was in General Washington's garden. Now they are plenty in Philadelphia, and even farther North. He had planted the soft-shelled almond in Florida, and was of opinion that it would do well, and might supersede the imported article. Plants generally have a uniform temperature at all hours, as he had demonstrated some years ago, by placing the bulb of a thermometer in a tree. This equal temperature tended to equalize heat and cold in timbered countries, as is evident from the sudden changes in places destitute of trees.

General Dearborn having, in the course of his remarks, alluded to his correspondence on the subject of a botanical garden in Florida, was requested by a committee of the Institute to furnish the same for publication, in connection with the report of the proceedings of this Convention. He kindly complied, and the letters are inserted.

Hawthorn Cottage, Roxbury, December, 1846.

MY DEAR SIR:—I enclose the copy of a letter from Professor Wurdemann, an eminent physician of South Carolina, to General D. D. Clinch, of Georgia, in relation to the establishment of a botanical garden in Florida, which was transmitted to me by Doctor A. Mitchell of Portland, Maine, from the belief that I would be gratified to learn the views of a scientific gentleman of such distinction, so exactly quadrate with those entertained by the American Institute, upon a subject that claimed its special attention, during the last exhibition of the products of the earth and mechanical industry.

From the extensive information which Dr. Wurdemann possesses of the extreme southern region of our country, great confidence may be placed in his statements, as to the climate of Florida, and the advantages which would be derived, from the location of a garden of acclimation in that state.

Dr. Mitchell is entitled to the highest respect for the commendable and zealous efforts he has made to investigate the various departments of our natural history. Within the past six or eight years he has collected specimens of most of the birds of New-England, and many of the quadrupeds, as well as of other animals, and has prepared them in a very perfect manner for insuring their preservation. I have never seen more beautiful illustrati ns of the very difficult art of securing examples against that decay to which such precious acquisitions are liable.

He passed the last winter in the North, for the express purpose of making additions to his valuable cabinet of ornithology, and was so successful as to have procured numerous specimens which were set up in the best manner, and brought safely to Portland.

It was during his absence, and while making explorations on the River St. Mary, that the idea occurred to him, of the establishment of a garden in Eastern Florida, and I received several letters from him on that subject, before and after his return.

You will recollect, that during the session of the Convention of farmers and horticulturists, in October, I referred to the valuable services which Doctor Mitchell had rendered to his country, as a naturalist, and the measures he had taken, as well as those which he considered it important should be adopted by the government and the patriotic cultivators of the soil throughout the Union, for the foundation of a garden of acclimation; and it is also proper to state that he has corresponded with a number of the most intelligent gentlemen in several of the southern states, on this very interesting and important subject, and has received assurances of their cordial co-operation. General Clinch, who commanded our military forces in Florida, for a number of years, and now resides in Georgia, not only fully approves of the plan, but is confident of the immense advantages which will result from its being carried into effect.

General Clinch is one of those intelligent, liberal, and warm-hearted patriots, who looks far into the future, and has a sanguine belief in the grand destinies of the United States, and is ever ready to aid in promoting the prosperity of his country.

Confident that the American Institute will cheerfully and efficiently use its influence in a manner that will merit the gratitude of the present and future generations, I shall await the result of the efforts it has determined to make, in the full belief that they will be crowned with success.

Very respectfully, your most obedient servant,

H. A. S. DEARBORN.

T. B. Wakeman, Esq., *Corresponding Secretary of the American Institute of New-York.*

LETTER OF DR. WURDEMANN TO GEN. CLINCH.

Clarksville, Georgia, September 19, 1846.

GEN. D. D. CLINCH,

Dear Sir—The intention of forming the company referred to by your correspondent, Dr. A. Mitchell, for establishing a botanical garden in Florida, for the purpose of propagating tropical plants, is one which should meet the support, not only of the state and general government, but also of every lover of natural history in our whole country. Its establishment is certainly feasible, and it could moreover be rendered very profitable to those engaged in it, by making it a nursery, from which the farmers of Florida could obtain a supply of tropical plants and trees; and thus convert their uncultivated wilds into gardens, as luxuriant and beautiful as those which now form the chief charm of the West India Islands; besides the market which the numerous gardens and hot-houses would present in our larger cities of the north and south.

By selecting a suitable site for a boarding-house near the establishment, it would offer a pleasant retreat for invalids during the winter. The journey to the West Indies is too dangerous and tedious, and the privations and expenses to which they are subjected, are too great ever to render them places of general resort for that class of travelers. There are also other objections of still greater weight—the insalubrity of the climate of most of the accessable islands, and too great a heat of their winter months. After a residence of six consecutive winters under the tropics, I have been able to select only one, and that one not entirely free from objections. The smaller islands, as Santa Cruz, Curacoa, Key West, and Indian Keys, do not afford shelter from the pernicious atmosphere that ever hangs along the borders of the sea. Could a salubrious situation be selected in Florida, far enough inland to be out of the influence of that atmosphere, while its own climate being dry, I do not hesitate to predict, that with suitable accommodations for invalids, they would flock to it from all parts of our widely extended country.

The high, sandy, pine regions of the State about, or not much below the latitude of St. Augustine, must present many proper sites for a hotel. From my own experience and observation, I am inclined to believe that a region occasionally visited with cold sufficient to require woolen clothing, is the best suited, by its bracing effects, for consumption especially. The heat in one more southern is too debili-

tating, and they are moreover not entirely free from malaria, even during winter.

I earnestly hope that the plan proposed, to form a company, referred to by Dr. Mitchell, will meet with encouragement, and that they will not wait for the support of the general government in the commencement. Under one or two efficient agents, a profitable investment would be made, and success would be certain.

I am, dear sir, very respectfully,

Your obedient servant,

H. WURDEMANN.

While the subject of making a grant of land in Florida to Dr. Perrine, for the purpose of acclimating tropical plants, was under consideration in Congress, in 1838, the following letters from Gen. H. A. S. Dearborn, of Massachusetts, on that subject, to the Hon. Levi Lincoln and Dr. Perrine, were published in the National Intelligencer:

Hawthorn Cottage, Roxbury, April 17, 1838.

My dear sir—I am very much obliged to you for the report of the agricultural committee on the memorial of Dr. Perrine, in relation to the culture of tropical plants in Florida, which you were so kind as to send me. I have read it with the deepest interest, instruction and pleasure; and so favorable do I think of his honorable and patriotic enterprise, that I most sincerely hope Congress will cheerfully and promptly grant his request, and aid him in the most liberal manner.

The introduction of a single plant or seed has, in all ages and nations, frequently produced the most important and valuable results. The mighty influence on the agricultural industry and the general prosperity of empires, which the naturalization and culture of the cereal grains, the olive, vine, white mulberry for the food of the silk worm, the sugar cane, coffee plant, cotton, potato, rice, and tobacco, have produced, is well known, and I have no doubt that several of the plants which Dr. Perrine has now growing at Cape Florida and Indian Key, may possibly become staple articles of cultivation in several of the most southern States. Besides, I do not think so meanly of the capabilities of the soil of Florida as most people. I well remember that Louisiana was called a mere alligator swamp, when first so cheaply acquired. The single fact that East Florida is the *only portion* of the Union where many of *the most precious of the tropical plants can be acclimated,* will at no very distant period

bring every acre of land into great demand for tillage. It will be drained, diked, embanked, and converted into various kinds of plantations. What was Holland before its dikes and canals were constructed?*

What has made the cotton and sugar estates of lower Louisiana so prolific, but the *levees* for restraining the overflowings of the Mississippi? What the rice fields of South Carolina and Georgia? Human genius and indomitable industry, where there is a cheering prospect of reward, will triumph over all natural physical difficulties. We know the knights of Malta made fertile gardens on the barren rocks of that island, celebrated for their chivalrous deeds and as the site of Paul's shipwreck, by pounding up the loose and scattered stones which covered its bleak surface, and importing soil from Sicily to mix with their dust. The Mexicans had floating gardens in Lake Tezcuco, where their capital city was established. The Chinese have long resorted to the same means of rearing culinary and other plants, and not an inch of soil, even though situated amidst the precipitous cliffs of the mountains, is untilled, so great is the demand for vegetable products by the thronged population of the Celestial Empire. The lemon and orange groves of Portugal and Sicily, are established and maintained by an expensive and laborious system of artificial fountains and channels of irrigation. With us, land is so abundant, in comparison with the population, that we have no just conception of its value, as estimated in those portions of the globe, where the inhabitants are so numerous that a few roods are considered an estate so ample that the fortunate proprietor is accounted an independent man.

But even in the vast extent of the United States, with the millions of acres still in a state of nature, how many thuosands are now cultivated, which, a few generations since, aye, in our day, were deemed worthless! In England, what extensive morasses have been reclaimed and added to the domain of agriculture, while the heath-cover-

* The government of Holland is now engaged in draining Harlem lake, which covers an area of 45,000 acres, or over seventy square miles, to the depth of thirteen feet below low water, in the Zuyder Zee, for the purpose of securing Amsterdam and Leyden, as well as a large region of farms and villages, from inundation, and to convert the bed of the lake into tillage land. To accomplish this grand object, three enormous steam engines are employed, which work eleven pumps each, which are 63 inches in diameter, that discharge 2,500,000 tons of water per 24 hours. These engines, it has been calculated, will drain the lake in 400 days, at an expense of 580,000 dollars. The first engine was completed in 1845.

ed mountains of Wales and Scotland are rapidly being planted with magnificent forests, not for embellishment merely, but as inexhaustible sources of wealth. The old duke of Athol planted a forest on his estate in Perthshire, of 15,593 acres, which contained 27,431,600 young trees when he died; and his successor set out 6,500 acres of poor mountain land solely with larches. The land was not worth over twenty-two cents rent per acre; and now, with the timber on it, is valued at $32,500,000.

The citizens of this country have, here and there, selected the most fertile and eligible locations, and call most of the immense remainder of the land either refuse or worthless. Time and the increase of population will show that nearly the whole will become more valuable than even what is now considered the most choice. Embankments like those in the vicinity of New-Orleans will be extended on each bank of the Mississippi, from the Gulf of Mexico to the falls of St. Anthony.

If but one of the most valuable of the two hundred plants introduced by Dr. Perrine, can be successfully cultivated, all Florida will be drained and become luxuriant fields and gardens, and be embellished by canals, rivers, bays, harbors and beautiful lakes. It will be the Cuba of this nation.

I know your liberal disposition, and enlightened and enlarged views in relation to subjects connected with agriculture, and all the great branches of national industry, and am confident you will be disposed to do what is expedient on this occasion.

Dr. Perrine, like most men of science and ardent patriotism, has devoted much time and expended his resources for a great purpose, is sanguine in the beneficial results to the Republic, and the hope of future remuneration from his own practical exertion; and it is very desirable that he should not be left, as is too often the case, to lament his labors and to find that others hereafter reap the fruits of his meritorious enterprise without having endured any of the toils, or incurred any of the expenses of a first experiment. Congress must be to him as munificent as would have been Henry IV. of France, or Napoleon, to render his indefatigable researches and accumulated intelligence upon subjects he has presented to the consideration of the government useful and honorable to himself and the country.

With assurances of the highest respect and esteem,

Your obedient servant,

H. A. S. DEARBORN.

Hon. Levi Lincoln, Member of Congress for Massachusetts.

Hawthorn Cottage, Roxbury, June 20, 1838.

Dear Sir—Your two letters and the samples of the foliaceous fibres of the precious tropical plants which you are desirous of introducing into Florida, have been received. I am extremely obliged to you for this kind attention, and very happy to learn that the letter to my estimable friend, Governor Lincoln, afforded you any satisfaction. It was but the expression of my gratitude for the highly commendable efforts you were making to subserve the interests of your country, by furnishing a new source to the agricultural and manufacturing industry of the United States; for every raw material produced, even in the extreme south, is a direct benefit to the mechanical and commercial enterprise of the north. I am fully sensible of the difficulties you have been compelled to encounter, in your laudable endeavors, and how laborious and discouraging is the position of a gentleman who has a favorite and important object to accomplish, which requires the generous co-operation of the national government, and especially if it is of a novel character. The momentous subjects before Congress, growing out of our domestic and foreign relations, have been of such an all-engrossing character, as to require immediate action, and have not left the members at leisure to attend to less pressing matters. Besides, there are comparatively but so few persons who take an interest in political economy, scientific inquiries, or any measure which requires much research, that an utter indifference to them too generally exists in the whole community. And it is not until more complete and exact knowledge is obtained, that the same zeal and promptness of action is induced, as when the end to be obtained is obvious, and universally approved, from the evident advantages which are to follow.

Be not discouraged, therefore, for *facts* and *truths* are mighty in their operations, and will ultimately triumph over all impediments. Columbus was for years a petitioner to no less than three sovereigns, and on the point of appealing to the bounty and energy of a fourth, before his gigantic conception of the existence of a "New World" was credited and his voyage of discovery undertaken. Newton's theory of gravitation was not adopted even by the academicians of France, until forty years after the publication of his Principia; and Galileo was obliged to confess before the assembled authorities of the Romish church, "that the earth did not turn round on its axis." Still that remarkable philosopher did not despair, but as he arose from his humbled position, and brushed the dust from his knees, whispered to a friend, "Nevertheless, the earth does revolve;" and

his belief has become universal, although the pontifical decree, denouncing it as a heresy, remains unappealed.

The value and importance of the experiment you contemplate making is so great to the whole Republic, that it is impossible that it shall not be undertaken, when the object is fully understood, in all its vast scope and bearing, and by our almost unanimous voice. The citizens of the United States are at times, difficult to be excited, but when the course is made clear, and the anticipated result of momentous import, they evince an ardor and an energy which sweeps like a flood every obstacle, and there is no relaxation until the work has been consummated. How long were roads, canals and railways urged upon the attention of the state and national legislatures before they obtained any favorable consideration! And at last, indignant at the slow movements and parsimonious policy of their governments, the people came forth in their strength; and behold the glorious consequences! Prove that a measure is based on *truth*, and will be *useful*, and it will be adopted. Let the pioneer of improvement enlighten the route he has taken with the flame of intelligence, and his followers will be as numerous as the object to be accomplished demands.

One of the kind of fibres you sent me, that of the forest pine apple, *Bromella pita*, is of a remarkable glossy and delicate character, and I should think would make a beautiful and excellent thread, as the most perfectly prepared flax, or the filaments of the silkworm.

The value of the culture of the *Agave Sisalana*, from which is obtained the Sisal hemp of commerce, may be conceived from the following facts, which I have taken some pains to ascertain since the receipt of your first letter, as it is a substitute for the Manilla hemp, which is the fibre of the petiole, of a species of *Banana*, cultivated in the Phillippine islands.

Cordage made of Manilla hemp is now preferred for the running rigging and hausers of the vessels in the fisheries, coasting and foreign trade, as well as all the steamboats on the lakes and western waters; it being as durable as hempen cordage and much lighter, the weight being for ropes of like size and length nearly as eight to ten. The whalemen, the five hundred ships engaged in that adventurous navigation, have given it a thorough trial, and from its bouyancy, it is universally used for their long tow-lines employed in the perilous capture of the leviathans of the deep.

All the Sisal hemp which can be procured is manufactured, and makes quite as good cordage for most purposes, as the Manilla; but the fibre not being quite as flexible—owing, probably, to the less perfect manner of preparing it, the price is lower. For the last three years, the Manilla hemp has been from 7 to 7½ cents per pound, and Sisal from 6 to 6½ and 7.

The quantity of Manilla hemp imported into the United States, during the last year, is estimated by a manufacturer of cordage, who lives in this town, at 28,000 bales, each weighing 270 pounds; the cost of which, at 7½ cents, amounts to $567,000.

The above mentioned manufacturer has invented machinery, which he has in full operation, for spinning Manilla hemp; and has also made cordage from the Sisal with the same apparatus. There is another large factory in Boston, in which the process of spinning was invented by Professor Treadwell, of Harvard University. The latter works are driven by water, and the former by steam power.

There are two rope walks in this town which manufactured into cordage of Manilla hemp,---------- 3,000 bales.
One in Boston,---------- 1,200 "
Five in Charlestown and Cambridge,---------- 1,000 "
Five in Salem and Marblehead,---------- 3,200 "
One in Windham,---------- 200 "
Two in Plymouth,---------- 1,400 "

10,000 bales.
In the other New-England States,---------- 5,000 "
In New-York, Philadelphia, Baltimore and other places,---------- 13,000 "

Total quantity in the United States,-------- 28,000 bales.

With the best wishes for your success, in obtaining the generous patronage of Congress, and for your prosperous prosecution of an experiment in Florida, I offer assurance of my unfeigned respect.

Your most obedient servant,

H. A. S. DEARBORN.

DOCTOR HENRY PERRINE.

The American Institute having seriously considered the importance of the experiment which Doctor Perrine was anxious to make, on the naturalization of tropical plants, adopted the following resolution, in 1838.

Resolved, That the American Institute of the city of New-York, have noticed with great interest and pleasure, the zealous, unprecedented persevering efforts of their countryman, Dr. Henry Perrine, late United States consul at Campeachy, to engage the attention of our government, to encourage the acclimation and culture of tropical plants in this country, and feeling strongly impressed with the great importance of his enterprise, would respectfully, but earnestly recommend the same to the special consideration and patronage of Congress, and to the favorable notice of their fellow citizens engaged in agricultural pursuits, particularly in the southern portions of our country.

Dr. Underhill, in relation to gases from brick yards, said, that it was not satifactorily determined whether the injury to vegetation was produced by sulphuretted hydrogen and the other gases from coal, or sulphurous acid gas. The gas which does the injury was evidently light, from the distance its effects are observed. With a moderate breeze the gas will travel for miles from the kilns in the course of a few hours. All along the river, from New-York to Albany, its effects are discernable. He had carefully observed the action for six years, desiring to learn some remedy for the evil, and what he said of the extent and appearance of the injury he founded upon actual observation. Some remedy must soon be applied, or many of our best orchards and ornamental trees will be destroyed. Wherever the evil lies, in the coal or the clay, or in both, we desire only to get at the truth, and then we hope to find the much desired remedy.

Col. Clarke stated, that sulphurous acid gas, when disengaged, combined with about 700 times its volume of water. He did not know how far the wind might carry it. It was evident, in cities, that the carbonic acid gas, and carbonic oxide, disengaged by thousands of coal fires, is not injurious to vegetation. Sulphurous acid gas is very insidious and injurious. Sulphate of alumina exists in all clay; in some near Baltimore to such an extent that alum is made from it by the simple addition of potash.

Mr. Wakeman thought this discussion out of order, inasmuch as the subject was in the hands of a committee, from whom no report had yet been received.

Mr. Van Wyck advised the committee to proceed with caution in the premises. In any event it was an attack upon the brick makers. If the premises proved false, the matter would be a blot on the reputation of the committee and the Institute; if true, the farmers would set up a cry against brick makers, and that also would react on the Institute.

Mr. Ellsworth rose to call to order. It was a very delicate question, and he hoped no debate would be allowed anterior to the report, if the committee took two years to deliberate.

Dr. Underhill said, we should be very cautious; but when we knew we had got hold of the truth we should speak out, let who will be offended.

After a few suggestions by Messrs. Van Wyck, Underhill and Ellsworth,

Mr. Wakeman moved that Professor Renwick of Columbia College, and Dr. Chilton, both of this city, be added to the committee on this subject, which motion prevailed.

Mr. Wakeman, from the committee on the subject of an Agricultural college, then read the following

REPORT

Of the committee on the establishment of an Agricultural College.

The committee appointed on Tuesday to draft a resolution, expressive of the views of the Convention on the suggestion concerning the establishment of an Agricultural College and Pattern Farm, in or near the city of New-York, beg leave to report:

Whereas, agricultural science is in its nature as extensive as life, and embraces the actions of the ponderable and imponderable elements and the proximate principles of all living things, and the reciprocal influences of form and constituence; and whereas, this science involves the investigations of those most intricate and delicate principles and actions, which investigations require such means and abilities as place them beyond the compass of private citizens. And whereas the commercial relations of the United States and the necessary immediate connection of eight-tenths of our population with rural pursuits, and the consequent power, virtue and wealth of the nation, require the greatest agricultural results at the least expense,

which can only be accomplished by personal union of science and practical skill. And whereas, agricultural science is in its infancy, and many of its leading principles just now evolving, and further, is as yet unembodied—therefore

Resolved, Agriculture requires an institution with all necessary appliances, for the cultivation and diffusion of its science, and its application to all branches of *rural industry*.

Resolved, The American Institute be and hereby is requested and urged to prosecute with zeal and perseverance the establishment of such an institution, the reasons for which are contained in the following memorial, addressed to the State Legislature at its last session, to which the committee beg leave to refer:

To the Honorable Legislature of the State of New-York:

The Farmers' Club of the American Institute respectfully petition your Honorable body for the establishment near the city of New-York, of an Agricultural College and Experimental Farm.

This application is caused by the growth of a new sentiment among men. They have been habituated for ages to see a very small class of the community selected for education in colleges, acquiring literature and science—thence filling the learned professions and influencing legislation. This has been deemed a great good because it secured the existence of learning at least if it did not render it sufficiently general among men. But a new sentiment exists and grows among all civilized men. That sentiment is, that the useful arts, especially above all things, agriculture, must be elevated to their highest possible rank. That all our learning must be now connected closely with these useful arts. That all the sciences of the colleges —the powers of commerce collecting from the whole world, must be brought to bear on the glorious fields of our country. That these great resources should be all united in the production of fertility where it is not, in the perfect culture of the staples which we already possess, and the introduction of all those for which our country is adapted; and what one is there of all the climates of our globe which may not find a fit location in this empire union, embracing all the best latitudes for vegetation?

We respectfully ask that an experiment may now be tried in this great State, of all those staples which can be found suitable to our own location; so that New-York city, the emporium of commerce, may,

by her thousand ships and roads, concentrate the first college and trial farm for all vegetable productions.

We ask not for private advantages. The State can provide the ground, and that will not fail to increase in value. The State can watch the progress of the experiment and arrest it if it should fail to answer the desired end. Having given by charter to the American Institute agriculture as one of its purposes, and looking at the course of the Institute during the last eighteen years in executing the purposes of its incorporation, we respectfully submit the reasonableness of the expectation that the Institute would carry out, satisfactorily, the agricultural college and farm, if it was entrusted with the trial by your honorable body. It is firmly believed by us that the college and farm can be put into operation by the grant of land and suitable accommodations; and that it can be made to flourish and increase without other limits than those of the State of New-York.

We must teach our young men as much of learning as will place them on a footing with the educated man of old Europe, and at the same time fix in them a perfect knowledge of farming, and by their daily labor on the college farm, *that habit of body, strength and health*, without which all the book-learning in the world is but of light value.

To an enlightened and patriotic legislature, it is needless for us to urge any further reasons; those reasons reach the very deepest foundations of our republic, and we well know that the legislature is imbued with them all.

Resolved, The commercial relations of the city of New-York, with the whole world and all parts of our own country, recommend its neighborhood as a proper location, and the city and State of New-York, the proper source of public endowment.

All which your committee respectfully submit.

T. B. WAKEMAN,
J. DARRACH.

On motion, the report was accepted.

Mr. Van Epps, from the committee on the culture of silk, then read the following report:

In reporting to this convention on the subject of silk, your committee have been at a loss to decide in what aspect to present it, in order to secure for it the greatest advantage from the action of this body.

Representing, as we do, almost every State in this Union, it is of the utmost importance that the subject be presented in such a form as to secure a *concert* of effort, when we shall have returned to our several States.

The practical connection of your committee with the silk business, will naturally lead you to anticipate from us an accurate statement of the present extent and condition of this enterprise.

It is with us a matter of regret that a branch of industry so evidently and intimately connected with our interests as a nation, and which, at the same time, has been so *fully* and *satisfactorily* tested in every latitude of our country, should advance so slowly, and elicit the energies of so few of our people.

From a large number of communications to which your committee have had access, we collect the most flattering evidences of success in regard to the *culture* of silk, wherever it has been undertaken with system, and in accordance with the nature of this most *delicate* and *particular* little insect, the silk worm.

Upon the bleakest highlands of *Maine*, among the hills of Vermont, throughout the valley of the Ohio, and the sunny regions of the extreme south, it has been alike successful—with only this difference, that in the cooler regions of the north, the employment of artificial heat has been occasionally necessary, to counteract the influence of the chilly dews of the night, which would otherwise materially retard their growth, and weaken the constitution of the silk worm.

Here, not more than six or eight weeks can be relied upon for feeding, while in some other sections the same number of *months* can be devoted to the business, with *less* labor, and augmented success.

On the subject of the mulberry tree, your committee would refer to resolution No. 4, of the New-England Silk Convention, as published in connection with the proceedings of this convention.

In regard to the *manufacture* of silk, we would only refer to the silk department of the "Great National Fair of the American Institute," now in progress at Castle Garden.

We would advise every member of this convention to go there and *examine* and *handle* those rich and elegant fabrics, honorable alike to

the hands that wrought them, and the soil that produced the raw material from which they were fabricated.

We will find there the cocoon, the reeled silk, and in almost every variety, satins, silks, and silk velvets; not perhaps so well finished as some we may have seen from other countries, and far inferior to what *we* shall ere long produce, but nevertheless beautiful and serviceable, and such as any American citizen should feel proud to wear.

Of the *ultimate* success of the silk culture, your committee entertain no doubt; but at the same time there are *obstacles* which have long borne heavily upon our progress, and which, unless obviated, must continue to embarrass us for many years to come, preventing our success, until hundreds of millions more of gold and silver are drained from our own resources to enrich those who oppress and degrade the unhappy operatives of other lands.

We wish to say *emphatically* that we believe *no other* country or people so well calculated to *perfect* the whole silk business, as our own.

The obstacles to which we refer are altogether artificial.

They are, unwise legislation on the part of the general government, and the want of suitable encouragement from both *national* and *state* authorities.

Your committee would here adopt resolutions No. 3, 5 and 6, of the New-England Silk Convention, and offer the following additional, viz.:

Resolved, That we most earnestly urge upon the approaching Congress, the importance of so correcting the duties upon both raw and manufactured silks, as to give such protection for us as to place us beyond the *possibility* of injury from foreign competition.

Resolved, That the establishment by Congress of a national filature, nursery, plantation and cocoonery in or near the District of Columbia, under the superintendence of a competent and experienced person, where individuals can obtain all the information necessary for prosecuting the *reeling* of silk, the cultivation of the mulberry tree, and the successful nurture of the silk worm, would be a measure of the utmost importance to every section of the Union, and calcu-

lated to advance the enterprise more than any other single instrumentality can do.

Resolved, That we believe it the duty of the legislatures of the several States, each to offer immediately a *liberal bounty* for the production of cocoons; and that we regret that the State of New-York should have refused, in opposition to the memorials of a considerable portion of the people, to *renew* a bounty which has been fostering the business for six years past.

Resolved, That we recommend to state and county agricultural colleges and institutes, the importance of connecting with their operations a department for the culture of silk, under the direction of those qualified to give instructions in this branch of industry.

All of which is respectfully submitted.

A. C. VAN EPPS,
J. B. HYDE,
J. M. SUMMEY,
H. P. BYRAM, *Committee.*

NEW-ENGLAND SILK CONVENTION.

The convention met at Northampton on Wednesday, August 19th, pursuant to a call by the officers of the last year.

Mr. Daniel Stebbins, of Northampton, in the chair; J. W. Smith, secretary.

The President stated that the officers had deemed it expedient to call the convention at an earlier day than usual, and had selected this as the place (Dr. D.'s cocoonery), in order to show the subject in the most practical and imposing manner. Before them were the silkworms feeding and spinning; yonder a reel with some most beautiful silk just reeled from the cocoons, by Mr. A. C. Van Epps, of the New-York filature, who, with his brother, have been here some time feeding a crop of worms, which have been carried through successfully, to the admiration and satisfaction of numerous citizens and strangers, who have from day to day visited them. In another part of the building might be seen an extensive and splendid exhibition of manufactured silk goods of a great variety — the handiwork of our own countrymen, and from raw material of our own production;

thus the subject presented itself in its beginning, continuation and completion, and certainly left no room for scepticism.

Then followed the appointment of officers for the ensuing year, viz: Dr. Daniel Stebbins, President; J. W. Smith, Secretary.

A series of resolutions were then presented by Mr Van Epps, which, after due discussion by the convention, were unanimously adopted, viz.:

Resolved, That we regard the numerous applications for information in reference to the silk culture, which have been forwarded from various sections of the country, as certain indications of a general progress, and that the accumulated cases of success represented to this convention, by communications and otherwise, furnish evidences for increased confidence in the congeniality of American soil and climate, the entire qualification of our citizens for the production of this delicate and valuable fabric; and leave no room to doubt, that in due time it will become, what its evident importance demands it should be, the *leading* staple of our country—furnishing with the raw material, not only our own manufactures, but those also of France and England. Hence,

Resolved, That we esteem it a patriotic duty, to urge forward the business, by every means in our power, as connected with individual interests and the wealth of our common country.

Resolved, That we recommend the careful preservation and *cultivation* of the mulberry tree now among us, and to increase them to a sufficient extent to supply a constantly increasing demand; and that we urge upon every farmer the planting of at least *one acre* of trees, from the foliage of which one or more crops of worms may annually be fed, without interfering with the ordinary pursuits of the farm.

Resolved, That we learn with regret the loss of numerous orchards by frosts, the consequence of an improper selection of soil or the use of too feeble a variety of the mulberry—and hence, would urge the necessity of high (or if low, well drained,) locations, and the employment of those varieties of mulberry which have been thoroughly tested, and are known to endure our winters. The Canton, Brousa, Asiatic and Alpine are such. The morus multicaulis will thrive south of latitude 41 degrees, and may be profitably employed; but north of this is unsafe, except with the greatest care; whereas, the

former will thrive and prove valuable in all parts of the country, both north and south.

Resolved, That we view the change recently made by Congress in the duties on imported silks, as altogether misjudged, and calculated directly to throw additional embarrassments in our way, which we are altogether unprepared to surmount; and that unless a more judicious policy be adopted by the next Congress, the business generally must be immeasurably retarded, and in some of its branches utterly destroyed.

Resolved, That we consider the practice of family reeling, productive of irregular and imperfect raw silk, and thus greatly interfering with the after uses to which such silks may be devoted. Hence, we recommend the establishment of a regular filature system, furnishing a cash market for all the cocoons produced, as the only effectual remedy for this evil, and intimately and inseparably connected with the ultimate success of the enterprise.

Resolved, That Dr. Stebbins of this place, deserves the thanks of this convention and the public generally, for his unceasing exertions to secure and supply the country with the best varieties of the mulberry tree.

Voted, That the President and Secretary be authorized to call the next Convention at such time and place as they may deem advisable; and that they also be requested to receive any communications that may be forwarded to them, for the National Convention of farmers, gardeners and silk culturers, to be held in the city of New-York, October 12th, in connection with the 19th Annual Fair of the American Institute.

Voted, That they (the President and Secretary) be authorized to appoint one or more delegates to represent this Convention in New-York, and to transmit by them any communications that may be forwarded to them for this purpose.

Voted, that this Convention do now adjourn.

DANIEL STEBBINS, *President.*

J. W. SMITH, *Secretary.*

On motion, the report was adopted.

Mr. Van Epps then remarked—

Now that this report has received the approval of this Convention, I wish to add a few brief suggestions, comprehending the subject of silk culture generally in the United States. Within the last few months I have spent some time in eight or ten of the most important states of the union, and have neglected no opportunity of acquainting myself with the extent and prospects of the silk business. These, with an extensive correspondence, and the facilities to which I have had access, enable me to judge somewhat accurately of the whole enterprise.

As far as I can learn, the number of persons engaged in it, and the quantity of the raw material produced are about the same as during the last three or four years. In every state more or less is doing, attended by success corresponding exactly with the care and judgment by which it is conducted. The importance of the business is universally acknowledged, as also the congeniality of all the natural facilities of our country for its prosecution. None doubt that silk can be produced and manufactured here as well and better even than in China or France. This we have taken for granted in our report, and the Convention have acquiesced in the view. But still the business progresses slowly, if indeed at all.

And why is it?

This question covers the whole field before us, and notwithstanding it has already a thousand times been answered, I would have it reiterated in this hall, and placed conspicuously on the proceedings of this Convention, and read by the tens of thousands into whose hands our report shall be thrown.

The silk cause in this country has been wholly without guardianship, an orphan, so to speak; for no systematic action has ever been put forth by government for its benefit.

I do not hesitate to say, that had Congress properly fostered or followed up the course Great Britain had commenced, we should this day have been independent of all other nations for this beautiful fabric, besides saving annually from twelve to fifteen millions of dollars to contribute to the comfort of our own people, and add to the wealth of the nation at large. What occasional encouragement has been extended by Congress or state legislatures, has been so trifling and *uncertain*, that they have failed to inspire confidence, and in the end rather retarded the cause they designed to benefit. The tariff of

1842 was favorable to our interests, when not fraudulently avoided, but even *this* has been withdrawn. I was at Washington when the question of repeal was agitating Congress. And when the subject of silk was undergoing the discussions of the committee, its interests were faithfully presented, and after Gen. M'Kay's bill had been reported, an amendment every way favorable was introduced and adopted by the committee in answer to the petitions forwarded, and personal influence exerted in the committee-room; but this was subsequently *reconsidered* and *stricken out*, and the wishes of speculating importers allowed to prevail over the *known* and *acknowledged* interests of our own citizens, and the welfare of the Union. We have urged, in our report, the importance of connecting the culture of silk with the other operations of our farmers, and thus making it general. In our opinion this is the *only way* to accomplish what we desire.

This is the course adopted by every nation in which the business is carried to any great extent. It is not *common* to meet with those who make it an exclusive business. I suppose that few establishments in the *world* exceed that of the German society at Economy, Penn. It can be made profitable upon a large scale; but we can never expect to produce a supply except through the masses of our citizens, whose other pursuits enable them to engage in it to a moderate extent without interfering materially with other branches, or adding much to their expense. The *butter and cheese principle* is the only one upon which we can depend.

As the *only* means for bringing this about, we have urged *state bounties*. And here, rather than upon any measures the general government can adopt, are my hopes centred. Give us from each state permanent liberal bounties, *first* upon mulberry-trees, and then upon cocoons and reeled silk, and the progress of the business would astonish the world.

I believe it would be a wise policy for every state to establish, under competent superintendence, an extensive nursery, from which to supply the farmers with trees; connected with which might be besides several large buildings for feeding a *normal silk school* and state filature. But with or without some such plan we must have bounties, or we shall never make silk. I have spent much time and some *money* in my efforts in this enterprise, but unless a new and better policy is soon adopted, I must withdraw my influence and abandon it forever. In this, I am sure, I speak the language of many others, who have done much, and whose influence has been *felt*, too,

in forwarding this business, and who would most gladly devote their lives to it.

I would here suggest the propriety, inasmuch as this is a *national convention*, of preparing a *general circular*, or *memorial*, addressed to the legislatures of the several states, on the importance of offering bounties, and otherwise providing for the advancement of silk culture. It will not do to delay. I think such a memorial would effect immense good. I hope it may be done.

Mr. Meigs said he had taken some pains to learn what was going on in Europe in relation to silk. Though France raises great quantities of silk, it is not done under government patronage or by large associations. It is raised by individuals, single families, giving employment to children and old people. The only way to sustain and advance the culture of silk in any country is on this principle. Suppose the amount from each farm is small—say $25 only in value, look at the aggregate where nearly every farm has this trifling moiety.

Mr. Hyde spoke of successful cultivation in families and of instances of failure in companies.

Mr. Wakeman observed that there was one subject which should become a constituent part of agricultural and of all education—a subject very much affecting the interests of a nation; it was, "the influence of the tariffs and commercial regulations of other nations upon our agriculture."

Mr. Ellsworth complimented Senator Niles, of Connecticut, on his efforts for the advancement of American manufactures, not only in public but private life.

Gen. Mercer remarked that Great Britain was like the fox who lost his tail; she had been absolutely forced to adopt free trade, and now she wants all other nations to do as she has done. America has every advantage over England for manufacturing except cheap labor. England knows if she could induce all the great powers to proclaim free trade she would become the work-shop of the world. Firm and liberal laws and mineral resources like those of England and America, will make any nation great. I am satisfied that our country possesses these in a greater degree than any other on the face of the earth, and especially for manufactures. Her extent is equal to that of Rome in her palmiest days; 1,600,000 square miles in the heart of the temperate zone. If Rome became so great in early ages, all

the while embroiled in foreign or civil wars, what may not we become, with the intelligence of this latter era and the advantages of peace? England's power arises partly from her position, and partly from her mighty navy; but for the channel, Bonaparte would have swept her from existence; her navy, the strong arm of her defence, is sustained by her commerce, and commerce by her manufactures. Commerce and manufactures make a nation.

Hon. Mr. Simmons, U. S. Senator, from Rhode Island, said, "I have long desired for the benefit of all men to see this question of protection become the common sentiment, irrespective of party lines. We have differences of opinion enough on other subjects. This idea of protection forced itself upon me, not from books or from the declarations of others, but from the results of actual experience; and it does me good to meet men with hearts so elevated as the honorable gentleman from Virginia, who boldly comes out in favor of what he once opposed—for if one effort of the mind is more excellent than another, it is the correction of early and enduring impressions. [Mr. Simmons bore testimony to the exertions of Senator Niles, of Connecticut, with whom he had been associated on committees, and who 'made more impression with less ostentation upon those he addressed,' than any other man with whom he was acquainted.]

"The 'influence of tariffs' is too broad to be here entered into. The gentleman who preceded me seemed to think that her judiciary system was the sheet anchor of England. I consider the sheet anchor of any nation to be liberal wages for labor, fair remuneration for the labor of the head and hand. If you have no starving people, you have no need of an energetic police. Remuneration for labor and correct public sentiment through the medium of liberal education, is the true basis of a free government. One of the reasons for prosecuting all branches of industry in this country, is the good influence of manufactures on agriculture. Our factories of all kinds are not congregated in one great Birmingham; we use water power, which necessarily disperses factories all over the country; England uses steam, the effect of which is to aggregate factories and population. The moral effect of this concentration of wealth and workmen is bad, for where there is a dense population there will vice and misery seek a home. Water power, of which we have such an abundance all over the land, is cheaper than steam, always by the value of fuel, and in many instances by the cost of fuel and engine. Water power, forbidding aggregation and scattering factories all over

the country, gives agriculture a market at her own door and furnishes the farmer with the very goods and implements he wants within an hour's ride of his homestead.

"In a moral view, too, it is good. The little villages springing up, new improved water works, are large enough to invite schools and academies, yet not so large as to support gambling houses and like pestilences.

"In regard to the free trade, no nation but England could adopt it with any degree of rationality. It is her object, it is essential to her prosperity, that she should obtain the monopoly of the world. The German league excluded her fabrics in that quarter; our coarse cottons interfered with her in several foreign ports; rise in food was increasing the cost of production—for to give corresponding increased wages would bring the actual cost of many of her manufactures above that of ours. Therefore to compete with us, and reduce the cost of her productions, she must have cheaper food, which would follow free trade as a matter of course; and therefore the duties were modified. How far her agriculturists will question this modification, remains to be seen. But it is her policy in this modification to look for remuneration to other nations; when she takes the value of £5,000,000 she expects to send £10,000,000 in return, keeping the cash balance in her favor.

"I do not look upon the recent modification of our tariff as likely to be at once very pernicious; the greatest evil that first ensues is want of confidence in the stability of the government policy. Some look upon all laws which spring from a parental regard by the government for the prosperity of her children, the people, as an interference with personal rights. Still there is no monopoly among us, as there has been in England in many instances. Trade between our States and people is unrestricted. What we desire by protection is security against foreign competition—to secure American supplies for American markets; believing manufactures to be as desirable in this country as agriculture.

"In Rhode Island the cotton manufacture was begun the year she came into the Union. A memorial was immediately sent to Congress at Philadelphia, asking to have the duty of three cents per pound on raw cotton taken off. One of the Senators from Georgia advised the petitioners to take back their memorial, telling them that if the duty was kept on, Georgia would in a few years raise cotton

enough to supply all the Union. The memorial was not presented, cotton enjoyed its protective duty unmolested, and the prophecy was quickly fulfilled. From this beginning, under protection, our cotton crop has grown to an extent and importance unparalleled, still enjoying (I believe) its protective tariff; and in it we have material to clothe the world.

"I have always looked upon England as a great and generally well governed country, a country always looking to her own interests. There is much to admire in her character—more in her policy. Yet I never had the least apprehension of her power. We want in this country a little more self reliance, and the position we occupy will be impregnable. I have often thought that if the government of the United States should assume any just position in opposition to European powers, and withhold our cotton from them for one year, they would be willing to concede to our terms. It is our duty to be just to others, generous to ourselves. I have great hope in such bodies as the American Institute, and desire that party may never thrust its unwelcome presence therein. I hope that all our people, without distinction of party, will look upon protection to our industry as a question in which all are alike interested. I have no party feeling therein; I urge it as an American measure of deep interest to all Americans; and I believe that the gratitude of laboring men will be the rich reward of those of our leading men who do most in this great cause."

Mr. Ellsworth spoke briefly of some eastern manufactories, and urged the importance of that branch of our industry.

Mr. Meigs. "What is protection? A defence against something. A roof is a protection against the rain; a fort is protection against an enemy. What do you ask of a power? Do you ask protection in your religion? If it is not granted, who will blame you if you plant a cannon in your church to defend your right of conscience? Do you ask protection in your work shops? Plant your cannon there also. My idea of protection goes this extreme length. And this protection is no new discovery; it was familiar to such men as Hamilton and Jefferson, and President Stiles inculcated it in 1760."

Mr. Ellsworth spoke briefly of the water power and manufactures in and near Hartford, Connecticut.

Dr. Underhill, from the committee on grapes and wine, made the following

REPORT

Of the Committee appointed by the Convention of Farmers, Gardeners' and Silk Culturists, on the culture of the native grape for wine, and for the table.

Whereas, the culture of the native grape for *wine* and for the *table* has been tried successfully, while every attempt to introduce the foreign for vineyard purposes has failed; and whereas, the amount of money that might be kept in the country, that is now sent abroad for these purposes, would be many millions, which would open a new field for the industry of our people; and whereas, the well known antiseptic and diluent properties of the grape, when used freely, exert a beneficial influence on the constitution, enabling it to ward off the autumnal fevers, an effect observed so frequently in the vineyard districts of France, that it has become a common expression, *that if you use the grape freely you will escape the fall fevers.*

Therefore *Resolved,* That the culture of the *native grape* is a subject of primary importance, and that it be recommended to all the *agricultural associations* over the Union, to make experiments with the different kinds growing in *their vicinity,* to ascertain their *properties, to test their qualities,* procure seedlings from them, and by high cultivation to secure such a variety of choice grapes, as will lay the foundation for as successful vineyard culture in this country as has been attained in any part of Europe.

On behalf of the committee,

R. T. UNDERHILL,

Chairman.

Mr. Hall said he was not aware that he was a member of the committee whose report had just been read. He dissented from some of its sections. The benefit of grapes in fevers he was not prepared to admit. Nor did he entirely agree with what was said in relation to raising foreign grapes in open air.

Dr. Underhill said foreign grapes could sometimes be raised with great care, in gardens, but there was not a successful vineyard of them in the country, though they had been tried in almost every State in the Union. So far as he knew, every vineyard had entirely failed. Yet if any one chooses, let him tread the beaten track of failure, he would not object.

Mr. Hall agreed as respects large vineyards. But we have a wide country, many parts of which have not yet been tried. There is at least room for further experiment.

Dr. Underhill said the foreign vines had been taken up at Georgetown College, and the Isabella and Catawba are to take their place. He related the failure of foreign grapes in Ohio, Indiana and many other States. Still he would be glad to see foreign varieties cultivated under glass for early table fruit. But our native grapes may easily be made to produce so abundant as to supply our tables for eight months in the year, and make a sufficiency of wine besides. Moreover, they may be so improved, and in some instances *have* been, as to be *almost*, I may say *quite* as good as the best foreign varieties. As an article of food, they are valuable at all seasons, more especially in autumn, when their antiseptic properties dilute the blood, carry off the bile, and reduce the tendency to bilious fever and kindred complaints.

Gen. Dearborn said, I bestowed, during eight or ten years, great care and labor on foreign grape vines; after patiently trying every art and science to produce a favorable result, I succeeded in raising just no grapes at all, and all my exertions ended in smoke; for I pulled up the vines and burnt them. My father was government minister at Lisbon, and while there, took great pains to get choice vines, which he forwarded with ample directions, to me. I cultivated them seven years with no success, and then dug them up. I now have the Isabellas and Catawbas. There is scarcely a man near Boston but has made like experiments. Sometimes they got a bunch of grapes, generally not; unless indeed, they kept their vines under glass; in which case the fruit was abundant and fine, as the exhibitions of the Horticultural Society, over which I have the honor to preside, have shown. We have had these grapes highly praised by men who have travelled along the shores of the Mediterranean—the very region of good grapes. When I was in Congress, I visited Col. Adams', President Madison's and Governor Barbour's vineyards, in all which, the foreign vine had failed. On the plantation once the seat of Joel Barlow, a man of considerable reputation as a horticulturist, the foreign vines had been dug up, and natives substituted. When the refugees from France came to this country, Congress gave them a tract of land on the Black Warrior. There they planted a noble vineyard of foreign vines; but it was very soon abandoned. Many other instances of the disastrous result of cultivating foreign vines I could mention, but these will suffice. Concerning the health-

ful properties of grapes, a single statement will be satisfactory. Some years ago, while a French army was going to Italy, they halted for a time at the foot of the Alps. While there, a malignant dysentery broke out among them, and men died with alarming rapidity. The disease baffled all the efforts of the French army physicians—and of their skill, fame has borne abundant witness. They went to an eminent physician of the town near by, craving his counsel. "Give them ripe grapes," said he; "send out your commissaries and buy up all the vineyards; let those who are able, go into them and eat as long as they choose, and bring in enough for their feebler companions." This advice was followed, and to the surprise of the army, the disease was instantly stopped. No more were taken sick, and many who had been given up to die, recovered.

Dr. Underhill was glad to hear this confirmation of his experience from a gentleman so trite and correct in his observations, as the honorable chairman.

Mr. Wakeman observed, that much had been said of the great stress laid upon protection, by the American Institute. He thought that members should be guarded in expressing their views. He had been a member from the first, and never knew a question of politics raised. The first address was issued to the public by the Institute almost twenty years ago. It was then unanimously approved in a full meeting at Tammany Hall, by all political parties. Col. Few, one of the grand sachems of Tammany, presided at the meeting, and signed the address as president, and John Mason, one of our best and most successful merchants, as vice-president. Not a whisper that it was political, from any quarter. The same principles have been advocated down to this time, and unhesitatingly sanctioned by the members composed of all parties. What grand discovery is now made, that has escaped the keen vision of all that have gone before? It is preposterous! I can bear witness, that to my recollection, among all the members admitted for nineteen years, I never heard the question, to what political party the candidate belonged. And every clerk will bear testimony to the same. At his request,

Mr. Meigs read a portion of the records of the Institute, dated March 11th, 1828, as follows:

ADDRESS AND RESOLUTIONS OF THE AMERICAN INSTITUTE.

At a meeting of the "American Institute of the city of New-York," held at Tammany Hall on the 11th of March, 1828, the

committee appointed for that purpose, submitted the following address to the society, and on motion it was *Resolved*, That the same be adopted, signed by the President, Vice-Presidents and Secretaries, and published.

Resolved, That the formation of societies similar to this Institute, in the different counties of this State and neighboring States, be recommended to the friends of the "American System," and that they be requested to give public notice of their several organs of communication.

Resolved, That associations embracing similar objects with this Institute, that already are, or which may hereafter be formed, are invited to correspond with this association, for the purpose of collecting and diffusing information.

ADDRESS.

Fellow Citizens:—The members and associates of "*The American Institute of the City of New-York*," having been impelled by motives which we are conscious, proceed from public spirit and patriotism alone, to organize a society under the above title, it belongs to us, in submitting our proceedings to the public eye, to present to you the considerations by which we have been actuated. We shall accordingly state to you with entire frankness, the objects of our association, and the means which we propose for their accomplishment.

The members of the society, entertaining the same views in relation to the policy of encouraging and protecting our national industry, have believed that the most effectual service that can be rendered to that cause is the diffusion of a more thorough and intimate knowledge of our national resources—agricultural, commercial and manufacturing. Anticipating, from the inquiries and labors of zealous advocates of our principles, acting in concert, the most favorable operation upon public sentiment, they have resolved to unite themselves as a society, under the name of "The American Institute of the City of New-York." In the constitution it has adopted, the objects of its foundation are declared to be:—"*to promote improvements in the Mechanic Arts; to encourage American Industry in Agriculture, Manufactures and Commerce; and to sustain such a system of policy as will protect the great National Interests of our Country.*"

Such are the objects of our society; and although in attempting by

our humble labors to contribute to the advancement of these great interests, we may not escape the charge of presumption—we hope at least, to gain credit for patriotic intentions. As our efforts are to be directed to the connection and investigation of facts—to the examination of the sure sources of national wealth and prosperity—as we propose, from time to time, to appeal to the public attention with established facts and principles, with dispassionate reasoning and researches alone—may we not reasonably confide, not only that our motives will be favoraby appreciated, but that some success may follow our exertions? A beneficial influence may always be exerted upon the public mind by stimulating inquiry; erroneous notions and prejudices may be corrected, and we may aid in inspiring that self-reliance upon American skill and American industry, which becomes a nation of our population and resources. In a government like ours, the basis on which all legislative encouragement to national industry can alone repose, must be the information and wishes of the people. We have all seen and felt the importance, when the public sentiment was to be warmed into action, of concentrating the scattered rays of light by artificial means. It is thus that animation and movement are produced, while, in the ordinary course of events, an atmosphere would have prevailed, dense with palpable ignorance, and fatal to activity and enterprise.

Similar societies for the promotion of domestic industry, have for many years existed in several of our sister cities; much of the valuable information, and the tone of public sentiment throughout our country, in favor of the American System, may be traced to their activity and concert. Their example may serve at once for our guide and our encouragement.

The permanent prosperity of our country, we conceive, *must depend upon maintaining a perfect union; a healthful action and reaction between the three great branches of our national industry.* To maintain such an equilibrium among them as nearly as possible, is the avowed object, and as we believe, the sure tendency of the principles of the American System. The agriculture, or the commerce, or the manufactures, of any particular country, may either of them, under supposable circumstances, be so lucrative a channel of employment, that the great mass of its capital and all its enterprise shall tend toward that particular employment for years together. As long as the circumstances exist which gave that impulse and direction to them, so long will that particular channel swell with a tide of capital and industry, which shall overflow and enrich the whole

country. In such a peculiar state of any one branch of the industry of a nation, the comparative neglect of the others would scarcely be felt or perceived. But it is only an extraordinary state of the whole world that could produce so miraculous an effect upon any one branch of the industry of any particular country.

An entirely opposite state of things now prevails, and has, with trifling exceptions, prevailed in all modern nations and times. The mutual dependence and support of agriculture, commerce and manufactures, in the ordinary and permanent state of our country, in particular, are so universally recognized as to have passed into a maxim; it is on that basis that the policy and legislation of our country to promote the general welfare, must be founded. The national wealth and prosperity must flow from the reciprocal action; the intimate dependence and mutual demands of all the three branches of our national industry. To produce this practical unity--to establish between agriculture, manufactures and commerce, a permanent system of mutual exchanges, has been the aim and labor of all great statesmen in modern times, who have aimed at making their country rich, prosperous and powerful. They have cherished internal as well as external commerce; not as a separate and isolated interest, but as interwoven and incorporated with agricultural and manufacturing industry. It is impossible that too much encouragement can be given to either class of industry, unless accompanied with measures tending to depress the others. To encourage one, is to encourage all; so intimate is the relation between them--so perfect their unity and identity of interest.

Fully impressed with the truth of these general principles, it is with the deepest concern and regret that we daily witness so many attempts, in various quarters, to create and perpetuate a spirit unfriendly to the growth and prosperity of our own manufactures. It is as much to be wondered at, as to be deplored, that misguided zeal should be so long able to withstand the lights of experience, as well as the deductions of reason, on this subject. We are persuaded that the idea which has obtained in some quarters, that the extension and prosperity of American manufactures are unfriendly to American commerce, internal or external, is not of domestic origin. The very first commercial regulations of our government under the new constitution—the *tariff* established at the commencement of Washington's administration;--that act proclaims, upon its face and front, that the duties are established, as well for the encouragement of our own manufactures, as for the collection of revenue.

It was at that period of our government that the sagacious and profound statesmen, who then presided over the treasury department, recommended to the wisdom of Congress the protection of our infant manufactures. If the illustrious author of the report which contains that recommendation, had left behind him no other memorial of his enlarged and liberal policy, of the vast reach of his political views, of his wisdom and decision, the name of Hamilton would have gone down to posterity as the Colbert of his country. It is memorable, that at that period the correctness of his principles was almost universally assented to by American statesmen. Our manufactures had then scarcely budded. They were not of sufficient importance to awaken the jealousy of foreign manufactures. But as they have struck their roots wider and deeper in our soil, as their branches have spread so as to cast an increasing shadow upon foreign competition, we have seen a new spirit and theory of national policy set up in opposition to the spirit and the theory which Hamilton inculcated. If this new hypothesis had been confined to those who were at the pains to instruct us, that it was our true policy to continue to buy foreign manufactures and neglect our own, because the foreign manufacturer could afford to undersell the American, then the error would not have been very extensive, or of very long continuance. But the foreign authors of it called to their aid the theories of free and unrestricted commerce; totally inapplicable and absurd, while their own governments loaded our commerce with restrictions and prohibitions. They summoned to their aid, also, the prejudices of a large portion of the commercial community, by alarming their fears with predictions of the unfavorable operation of manufactures on foreign commerce, and by representing them as an interest rival and hostile to the commercial. They have sought also, with great success, to rouse the jealousies of the cotton planter, and to persuade him that he must buy foreign manufactures, or pay exorbitant prices for inferior American fabrics, if he did not indeed forfeit the foreign market for his cotton. These have been the chief elements of the opposition, which has been so long maintained to the American System.

Over all these obstacles and errors that system has thus far triumphed. A large majority of the American people are known and admitted to be in its favor. Its progress is steady, and its march is firm. But an active and zealous minority have often, in this as in other instances, succeeded in delaying where they could not eventually defeat. Exertions and sacrifices are made to sustain the interest of the foreign manufacturer, which, if made in the cause of

American industry, from patriotic, and not from narrow and interested motives, would entitle these champions to civic wreaths, and the public gratitude.

The friends of the American system are called upon to make some efforts in counteraction of principles and designs which we believe to be subversive of the true and enlightened policy of our country. We, in particular, are called on to vindicate our commercial emporium from the reproach—that a spirit exists here, among our own citizens, unfriendly to the growth of American manufactures; unfriendly to the equal pace of agricultural, manufacturing and commercial prosperity.

As if the city of New-York, the great mart to which the products of the whole country, which enter into commerce, agricultural or manufacturing, tend with a centripetal force, which every day enlarges its sphere of attraction;—to which agriculture and manufactures, even beyond the mountains, are constantly seeking avenues—as if the commerce of such a city was to be a loser and not a gainer by their general prosperity and activity!

There needs but little insight into the details of the commerce of our city and the country at large, to show how utterly groundless and fallacious in experience the idea has been proved—that manufactures are injurious to commerce, and that as they increase commerce must decline.

Precisely the reverse is the verdict of experience. For as our manufactures have increased, the variety and amount of our exports have increased along with them. Already our coarse cotton fabrics come into competition with, if they do not indeed exclude, those of European nations in South American markets. The most valuable commerce which any nation can carry on, must always be the interchange of the productions of its own industry, for those of other nations who will receive them. Agricultural products, bread-stuffs in particular, few countries will ordinarily receive from any other; for almost all depend on their own soil for their supplies, and take unwearied pains to foster their own agriculture. As our manufactures increase in extent and variety, we furnish more articles for export to the different nations in the four quarters of the globe, with whom we carry on commerce, who do not produce them. If we seize on these proffered facilities, our own agriculture and manufactures, like those of England and France, will sustain and extend our foreign com-

merce. We have succeeded in foreign markets, by the help of protection, in some articles of extensive demand. Why not in others with the same advantages? Is there a hopeless want of skill, of industry or of capital in our country, that should consign us to despair and inactivity? Is there an American that will give countenance to such a reproach—who will not repel it as an insulting calumny upon his country?

At this era, we need not long dread the prevalence of the idea we have alluded to, of any injurious operation upon foreign commerce resulting from manufactures. Experience is every day refuting it, with proofs that must soon accumulate to an irresistible force. But it is our task to aid, if possible, in hastening the complete triumph of a system which has yet to encounter so many and serious obstacles.

It has still to encounter, as heretofore, the resistance of an army of foreign agents; backed by the specious objections and arguments of their domestic allies, who, though refuted again and again, can argue still as ingeniously as ever. It has to encounter the threats of violent enemies, the treachery of pretended, and the neglect of lukewarm friends. It has still to contend against ancient errors and misrepresentations, and still more ancient and besotted prejudices. It belongs to its friends to pronounce, by their activity and constancy, whether the contest shall be ended at once and forever: or whether it shall be left to time and accident to bring it to a close—whether this system shall be practically enforced, or remain for years a theme of still beginning discussions and debates.

After all that has taken place, we rally, at this time, under the most auspicious circumstances. The American System has found favor in the eyes of a large majority of the American people; and their voice is daily demanding its extension, in a louder and more imperative tone. There needs but concert and activity to give it the force and form of an irreversible decree.

In adopting this mode of uniting our exertions, and in recommending the same course to our fellow-citizens who concur in our views, through the state and country, we are most solicitous to avoid all imputation of party motives and designs. We have suffered no feelings or views, in relation to the parties of the day, to intrude into our deliberations. On all occasions, we shall most scrupulously abstain from any interference in the struggle for power, which has unhappily severed our country into two political parties, except in so

far as either of them may evince hostility to the protection of American industry. With a deep concern for our country's welfare and honor, we cannot but deplore the spirit with which the contest is conducted. But this expression of our regret is the only allusion we shall make to its existence.

The only political object to which we direct our labors, we have already freely avowed. It is to aid in rallying the friends of the American system in support of its principles; in giving such an impulse to the public sentiment in its favor, that whoever may administer the government, and whoever may legislate for the general welfare, the voice of the peop'e shall be heard in unison on this subject at least—demanding in terms not to be mistaken, that full and unstinted protection to American industry, of which our agriculture, our manufactures and commerce all stand in equal need.

New-York, March, 1828.

WILLIAM FEW. *President.*

JOHN MASON,	1*st*	*Vice President.*
C. BOLTON,	2d	do
PETER H. SCHENCK,	2d	do
ENOS BALDWIN,	4th	do
ANSON HAYDN,	5th	do

JOHN B. YATES, J. A. SIDELL, } *Secretaries.*

Mr. Ellsworth agreed in the importance of excluding all politics in whatever shape, from the doings of the American Institute.

Mr. Wakeman said it had been usual to call this Convention together, by resolution, at the former session, during the Fairs of the Institute. He now raised a question of expediency in regard to its meeting at such times.

Mr. Van Wyck thought, as the object was to get as full an attendance as possible, it might be expedient to meet at some other time.

Other suggestions were made by Messrs. Ellsworth and Lawrence.

Gen. Dearborn differed from the previous speakers *toto cœlo.* We don't come here to inform each other; we come for more definite objects. I do not believe in instruction by great meetings and studied eloquence. In the learned societies of Europe a few men do all the work. In Congress, when a subject has been debated half the session, it may be referred to a committee of nine—if three of the com-

mittee attends its business session it is very good luck, and then some good, easy member must be found who is willing to undertake the getting up of the bill. He does the work as best suits him, and that is often all the committee knows or cares of it until it is read. The immortal works of Praxiteles, Milton, Newton, and La Place were not produced by great conventions, nor yet small committees—only one mind could work out their immortality. I do not believe in talking—we come here to do something. But as I am not a member of your Institute, I am perhaps intruding with these remarks. I can only plead a Yankee's meddlesome privilege, and hope you will excuse me if I assume too much for my station.

Mr. Meigs said it would never do to discontinue these meetings. It does not require a large attendance to do good. The Athenæum in Liverpool is a notable instance of what a few may accomplish. Roscoe, meeting a friend one morning, began to recount the necessity for such a building. They agreed to call a meeting; advertised largely, and got together two men only—themselves. Roscoe was appointed chairman and his friend secretary; they, the meeting, "unanimously resolved" thus and so, as the case required, and published their proceedings the next morning as those of a highly enthusiastic and respectable meeting, which none could gainsay. A subscription was opened, and in a short time the splendid edifice was erected. Dr. Mitchell, twenty-five years ago, got up an agricultural society, the preliminary meeting of which he alone attended.

Mr. Folsom remonstrated against abandoning these meetings. A great deal of knowledge was here obtained. He was aware that words were not wisdom—that the only way to advance was to work alone; but we want prompting, and we here get hints to work upon, which we scatter in our separation to all parts of the country.

Dr. Underhill was not sorry for Mr. Wakeman's suggestion; not that he by any means desired the Convention discontinued, but it showed how it was appreciated by those present. He hoped that its meetings would be continued as at present; the Fair brings together just the men we want from all parts of the country.

The chairman suggested that a room nearer the Fair would be better. If a man gets but one good idea at one of these meetings it well pays him for coming.

After a few words from Mr. Ellsworth on the increase of the cattle show from year to year,

On motion of Mr. Lawrence, the Convention adjourned to meet during the next annual Fairs, on a day to be hereafter fixed.

H. A. S. DEARBORN, *President.*

T. C. MUNN,
D. J. BROWNE,
Secretaries.

The following memorial was read and approved by the Convention:

TO THE HONORABLE LEGISLATURE OF THE STATE OF NEW-YORK.

The Farmers' Club of the American Institute respectfully petition your honorable body for the establishment of an agricultural college and experimental farm, near the city of New-York, under the care of the American Institute.

Your petitioners believe that in the purchase of a farm and erection of suitable buildings, the State reserving the right of property —no pecuniary loss to the State will ensue on account of the increasing value of land near this greatly increasing metropolis.

We need not tell such men as constitute the majority of your honorable body, that to the agricultural branch of national industry every possible encouragement is eminently due.

We only endeavor to show that we are of the fixed faith that a republic rests upon agricultural labor not only for its comfort and wealth, but upon the workers of the land for virtue and for perpetuity of our great republican system. We wish also to say, that notwithstanding men have always found the true glory of their existence dependent on agricultural labors—yet it has occurred in the history of nations, that a false pride, generated by wealth and prosperity, has been the cause of the decline and fall of empires. When a nation has ceased to honor the cultivators of the land it has been consumed by the consequence of that neglect. We desire to say that no expense and no effort should be spared to sustain and to honor the labor of the farmer—by public protection, by public notice, by public rewards rendering that ambition now more common in the other pursuits of life—greatly more so in the noble pursuits of the farmer.

And that the highest degree of instruction should be given to our cultivators—so that every product of the farm of the world may be

introduced among us, and every information in relation to them may be universally diffused.

With this view, we believe that an agricultural college and experimental farm can be of distinguished advantage to our country. And as the city of New-York is by commerce connected with all parts of the world, and readily receives all the productions of the earth, and by the vast consumption of food—by the manure of more *cattle and horses, &c.*, on this spot than on any other in America, by the refuse of articles employed in works of all sorts, the city of New-York is capable of affording more material for fertilizing soil than any other spot in this country. For it is a fair subject of calculation and will result in this, that the half million of people in New-York and the immediate vicinity, furnish those means for enriching more land than will sustain a million of people. And the city is also full of strangers from all parts of the world who can be induced to bring with them from every quarter, seeds, plants, animals, books and every thing that a State experimental farm can employ, at the least expense.

And as it has a great and increasing population, of which it is desirable that thousands should be made to love and understand agriculture—as there are numerous sensible capitalists who prefer for their children the life of a farmer rather than manufactures, or than the learned professions, who would avail themselves of such a college as this, we hope that your honorable body will take the first important step in our country for the establishment of such a college. We respectfully urge these as arguments for commencing the agricultural education here, hoping that when the trial here is found to be successful, then the State will establish like institutions in all the sections of our country suitable for them. If there is any thing true in our views of the distinguished importance of such an agricultural school, where could it do more good than in the vicinity, under the eye of a vast city population? We trust that of all public institutions such an one, by its wholesome example, would continually attract from inferior avocations, thousands of the growing youth of the city to the manly, noble exercises of such a school as this, keeping thus always before the eye of our great metropolis the inestimable evidence of the high value of a practical, economical, intelligent and healthy nursery of young men, contrasting deeply with the puny inefficient offspring of mere city growth.

The American Institute would provide in such a college, that every student should acquire the best knowledge to be obtained from the

rest of the world, and that he every day practically execute with his own hands the various work of a farm, and give him at once such an education as would enable him to farm in the best manner, and to represent his fellow citizens if necessary, in the halls of legislation.

It is high time in our opinion that such should be the education of an American citizen, so that a large majority of the representatives at all times should be farmers well educated.

And when we consider how large is the amount appropriated for colleges and universities, we think that it is becoming in the landed interest to ask for a liberal appropriation for that, the superior consideration of our country.

The governments of the old world are recently making great efforts at the national expense, in this interesting subject. America ought to be foremost. Her people should never suffer kings and emperors to shadow the glory of our republic by leading in such eminent legislation as this. Let us have the richest farms, the most excellent crops, the most perfect plows, spades and hoes—and above all other things the most highly intelligent men to use them all.

This was so in the best days of the greatest nations, and we believe that is our duty to excel them all. It is but to say so and it will be done. Your wisdom will easily regulate the conduct of the agricultural college; you will make its administration strictly economical as that of all farms should be; you will shut out all profligacy in manners or expenses; you will order it so that it shall be profitable to its members, profitable to our country, and a distinguished honor to the Empire State.

Your memorialists having thus stated the view taken by them of this interesting question, further beg leave thus to say that they desire only to bring before your honorable body the purpose they have in contemplation. Relying upon the wisdom of your honorable body to carry into execution the system of practical and theoretical education of men by any other ways and means more advisable in your judgment. Asking leave merely to say, that from the history of the conduct of the American Institute during the eighteen years of its existence, your honorable body may, we respectfully say, place that confidence in the Institute, which is necessary to place such an institution for education under its charge.

JEREMIAH JOHNSON, *President.*

H. MEIGS, *Secretary.*

OPENING ADDRESS,

Delivered at the 19th Annual Fair of the American Institute, Castle Garden, October 5th, 1846.

By the Hon. MAHLON DICKERSON, of New-Jersey, President of the Institute.

Gentlemen of the American Institute, and Fellow Citizens:

The Nineteenth Anniversary of this Institute presents new and most gratifying evidence of its influence upon the business and prosperity of the country, and of the unwearied diligence and perseverance of those who have devoted their time to the promotion of its great objects.

It would be a pleasing task to recount the services of many of its most zealous members, but this is not the proper time nor proper occasion. I must, however, be indulged in a brief notice of one, whose services have been pre-eminent. I allude to General James Tallmadge, late President of this Institute, whose resignation, since our last Fair, has been with great reluctance accepted. He presided for more than fifteen years over the affairs of the Institute, with distinguished ability, diligence and zeal, most liberally devoting his time and his purse to the promotion and encouragement of American industry. To his energy may be attributed, in no small degree, the present magnificent display of the products of agriculture, manufactures and the arts, alike gratifying to the feelings of the patriot and honorable to the country. Gen. Tallmadge must experience the most pleasing of all rewards—the approbation of his own conscience—when he sees the beneficial effects produced by his means; and I trust he may long have the evidence that his merits are duly estimated by his associates and fellow members, as well as by all American citizens, who have taken an interest in the principles he has so long and so ably advocated.

This Institute was incorporated by the Legislature of New-York, for the purpose of "promoting and encouraging domestic industry,

in this State and the United States, in agriculture, commerce, manufactures and the arts." Although it is indebted almost exclusively to the munificence of New-York for the means of accomplishing its great objects, yet its beneficial views are extended to all the States in the Union, and its rewards and honors are liberally distributed, without regard to sectional considerations; and its affairs are conducted, as far as practicable, free from the baleful effects of party prejudice and feeling.

To promote and encourage domestic industry, in agriculture, commerce, manufactures and the arts, is to improve the condition of the laboring classes engaged in those several branches of our national prosperity. This has been, and will continue to be, a primary object with the American Institute. And never were exertions in this cause more loudly called for than at the present moment, when, from our system of free trade, and the overwhelming pressure of foreign influence, we are threatened with the curse of European pauperism.

To form an estimate of what is due to the laboring classes of the free States of America, it will not be amiss to notice the condition of those of other countries and other times.

From the earliest period to which history extends, mankind have been separated, as they still are, into two great divisions: those who labor, and those who do not. As all the necessaries, comforts, and luxuries of life are the product of labor, it follows that those who do not labor must live upon the earnings of those who do. From which it would seem, that the laboring classes were entitled to the highest consideration, and to the greatest share of the products of their industry. But the reverse of this is the case; and, from the building of the pyramids of Egypt to the present time, in the old world, the condition of those who produce everything by their labor, has been, and continues to be, but little better than that of slaves to those who produce nothing.

If we take a view of modern Europe, we find that a small portion of its inhabitants, by a system of violence, fraud, and deception, are in possession of almost the entire wealth of the country, and that the larger portion are reduced to the most abject poverty; and that different governments seem to be established chiefly for the purpose of increasing the power of the rich and perpetuating the degraded condition of the poor; and nearly all the parties, political and reli-

gious, in those governments, and I fear in our own, if strictly analyzed, will be found to originate in selfish combinations of those who do not labor, to secure to themselves an undue share of the hard earnings of those who do. And the struggles of party which distract society, are but too frequently mere scrambles for the spoils.

It is said, that of the thirty-three millions of French subjects, twenty millions live without animal food, a like number never taste wheaten bread, and that eight millions of them are clothed in rags. Yet the poor of France are happy when compared with those of other nations of Europe; and their condition is vastly preferable to what it was previous to the revolution of 1789.

Great Britain presents the extremes of enormous wealth on the part of the few, and abject poverty on the part of the many; the richest aristocracy and most wretched laboring population in the Christian world, and the greatest amount of vice and crime, arising from these opposite conditions of society. The world has never before witnessed such useless extravagance and profusion on the part of the rich, and such extreme suffering on the part of the poor. In no other country, in no other age, has so much labor been extorted from the poor for the benefit of the rich, and for so small a reward. In no other country does there exist so great a contrast in the low wages of the laborer, and high wages of the officers of the government.

These systems of low and high wages, are mutually dependent upon each other; and when under our free trade we shall introduce the one, it will be difficult to exclude the other.

Happily, as yet, we are free from both; and long may we continue to be so.

The annual revenues of the church of Great Britain, are forty-one millions of dollars; nearly twice the amount necessary for the support of our government, economically administered, as it always is, and always will be, in the estimation of those who administer it.

The charges for the queen and royal family amount annually to three-hundred and twenty-three thousand pounds sterling, equal to one million five hundred and fifty-one thousand dollars. Our president and his family cost us twenty-five thousand dollars a year, so that the queen and royal family costs the subjects of Great Britain

more than sixty-two times as much as our president and his family cost the United States.

The salary of the lord high chancellor amounts to fourteen thousand pounds sterling, or sixty-seven thousand two hundred dollars a year; exceeding the aggregate salaries of our vice-president, the four heads of departments, state, treasury, war and navy, the nine judges of our supreme federal court, together with those of the post-master-general, attorney-general, and solicitor of the treasury.

The vast importance of the services rendered for these enormous sums, are not probably well understood in this country; but we can understand that so much paid to the dignified clergy, royal family, lord chancellor, and other high officers of the government, can leave but little to be divided among the laboring poor, whose hard earnings must pay for all.

A British weaver receives for his incessant labor, eight shillings sterling, per week, or about one hundred dollars a year; so that the services of the Lord Chancellor are deemed equivalent to those of six hundred and seventy weavers; a striking instance of high and low wages. In the Constitutional Convention of this State, a very different estimate would be formed of the relative merits of the chancellor and the weaver, by those who consider the whole chancery system as worse than useless.

The whole landed property of Great Britain belongs to about one-sixth part of the population, and many of the nobility have incomes to the amount of from two to three hundred thousand dollars a year. To increase the enormous incomes of the land-holders, the corn-laws have been enforced for many years, and will still continue to be enforced, under certain modifications, till the month of February, 1849.

An opinion has been expressed and published in the British papers, that the corn-laws brought to an untimely grave twenty thousand human beings a year. This is probably an exaggeration. But the queen, in her speech of January last, says: "I have to lament that, in consequence of the failure of the potato crop in several parts of the United Kingdom, there will be a deficient supply of an article of food, which forms *the chief subsistence of great numbers of my people.*" What must be the sufferings of millions of her laboring poor, whose chief subsistence is potatoes!

Shall our professional men—our lawyers, for instance—who derive their support from the productive labor of the country, but contribute nothing to it by their own hands, and whose business is not injured by foreign competition—shall they ask or desire that American manufactures shall maintain an unequal contest for the supply of our own home market, with foreign laborers who live upon potatoes?

Shall our gentlemen, who live sumptuously every day, and who do nothing for the general good—shall our hosts of officers, State and National, in all the departments of our government, who live upon salaries drawn from the products of labor—shall they wish that our laborers engaged in manufactures, should work at the low rate of wages paid to the famished operatives of Europe? Be assured that men who would willingly see our laborers reduced to the condition of those of Europe, never mean to labor themselves, but to live as cheaply as possible upon the labor of others.

It is the true interest of all classes, that labor should receive its just reward. In that case, thousands who now spend their time, from year to year, in the idle pursuit of petty offices—thousands of surplus merchants, whose business affords neither benefit to the public, nor profit to themselves, and thousands engaged in the learned professions, doing nothing, would resort to honest labor, and thus add to the prosperity of the country, to which they are now a burden.

The poor rates of Great Britain amount annually to more than the whole revenue of the United States, and probably an equal amount is raised by contributions from individuals and charitable societies; and yet, the laboring classes are reduced to the most abject poverty, attended with a frightful amount of vice and crime. How much better, nay, how much cheaper would it be for those who pay such enormous sums for charitable purposes, that the laboring classes should receive a fair compensation for their services, and that the consumer should pay a fair price for the products of their labor! This would at once put an end to nine-tenths of the poor rates and charitable contributions, and to a large portion of the vice and crime which are inseparable from extreme poverty. But this would break up the selfish system of Great Britain, of levying, by means of her cheap manufactures, contributions upon all nations who trade with her, and who have the folly to leave their own industry unprotected. And this again, would make it necessary to reduce the wages of the

royal family, of the dignified clergy, and of the lord chancellor, and other high officers of the British government, which, most probably, will never be done until effected by a revolution.

If Sir Robert Peel's free trade system would have the effect of securing to British manufacturing laborers the rate of wages paid to those of the United States, it would indeed be a blessing to the poor of both countries. But the reverse of this will be the case. The tendency of the system will be to introduce the low rate of British wages into the United States. And if Great Britain is to gain the market of the world for the sale of her manufactures, as it is evidently the aim of Sir Robert Peel, these rates must still be reduced to a lower point, and British laborers are to suffer, if possible, greater distress than they have yet known. Although they may, under the repeal of the corn-laws, obtain their food at reduced prices, yet if their wages should be reduced in a still greater degree, as will probably be the case, their condition will be more wretched than ever; and they will find that what is taken from the profits of the rich land-holder, is not to be applied to their benefit, but is to add to the means of the rich capitalists engaged in manufactures, that they may send the products of pauper labor over the commercial world.

The hopeless condition of the laboring classes of Great Britain, should admonish us to avoid, as a pestilence, whatever causes the enormous wealth of the few, and the abject poverty of the many—the high wages of the lord chancellor, and the low wages of the weaver—and especially whatever causes the immeasurable difference in the conditions of men, whom a just and merciful God has created equal.

Our ancestors, the pilgrims, who, driven by religious persecution from the mother country, first visited these shores, were all laborers. The artificial distinctions in society, now prevailing, were unknown to them; and although circumstances are much changed since that time, our laboring classes maintain an elevated condition, unknown to those of Europe. And that they should continue to do so, must be the wish of every American patriot.

The laboring classes of the free States of this Union, may be estimated at eight millions of people,—the bone and sinew of the republic,—upon whose strong arm the country depends for its prosperity in time of peace, and for its defence in time of war.

Their political and physical strength under our free constitution, enables them to control the destinies of the nation. They can secure and improve the advantages of their present condition, if they will exercise their legitimate power at elections, and take their proper part in making the laws of the country, instead of having their legislative business done by attorney, as is now too much the case. When, heretofore, they have selected their representatives to make laws for them from their own numbers, they have never been betrayed. We could refer with pride to numerous instances of distinguished legislators, who have acquired their property and supported themselves and families by the labor of their hands. When has the great, the working State of Pennsylvania, been more ably and more faithfully represented in the national legislature, than by her Findlays, and her Smileys, and her Inghams?

Our laboring classes have power to secure for domestic industry the advantages of our home market. This is all they ask; and this they should have, and, I trust, will have. Domestic competition would keep down prices of articles produced at rates which would be no more than a just compensation for the labor of production; and this, the classes who never engage in productive labor should not refuse to pay.

The system of reducing compensation to the lowest minimum by foreign competition, applies exclusively to productive labor. Those who never engage in such labor, experience none of it, and too frequently have no sympathy with those who do.

But, from all this, it is not to be inferred that the classes who avoid productive labor, are to be considered as idle or useless. On the contrary, a great portion of them are very industrious, and absolutely necessary to the well-being of the republic; another portion of them, however, do nothing, and are utterly useless to society; and most of them have an interest, or think they have, in depressing the wages of labor which they must sometimes pay for. This disposition is manifesting itself to an alarming degree in this country, and never more so than at the present moment. It has created infinite distress in Europe, and will do so in the United States, unless arrested by the patriotism of our most virtuous and enlightened citizens.

This country will be great and prosperous, or otherwise, exactly as our productive labor shall be increased or diminished.

Let us, therefore, carry out the good intentions of the Legislature in granting an act of incorporation to this Institute. Let us, with redoubled zeal, in the language of that act, *promote and encourage domestic industry*—the first step towards which must be *protection against foreign influence and foreign competition.*

ADDRESS

Delivered before the American Institute at Castle Garden, October 6th, 1846.

By Harman C. Westervelt, Esq.

Ladies and Gentlemen:—

The Nineteenth Annual Fair of the American Institute, which has been recently opened for the inspection and reward of the products of home ingenuity and native enterprize, we trust will continue to merit the favorable impressions which have been steadily hers for so many successive years. In fact, while useful labor and industry continue to meet with a protecting care, they must ever maintain a controlling influence throughout our land; and the fruit of the orchard—the crops of the farm—the results of the factory—the pursuits of the merchant, and the invention of the artizan, will progress and increase, some thirty, some sixty, and some an hundred fold.

We propose, in the present address, to make but a limited reference to the origin and design of Fairs as they have existed in the old countries, from time immemorial, that we may be enabled to show by contrast, the different motives by which they have been controlled from those whose anniversaries we continue to commemorate.

The definition of the word fair, is a greater kind of market; which in England is a privilege granted for the speedy and commodious arrangements of procuring, buying and selling such articles as a place may be in need of.

In the German a fair is called *messe*, which also signifies a mass. High masses on particular festivals collected great numbers of people, and from them probably originated the first markets.

Fair is also derived from a French word, *foire*, which signifies the same thing. By some the word *foire* is taken from the Latin *forum*, meaning a market; by others it is derived from the Latin, *feriæ*, because fairs were anciently held in places where the *feriæ* were held —such is at least the significancy of the Lexicon.

We, however, find that in Roman antiquity *feriæ* were certain holydays on which proclamation was made by a herald or officer at arms whose business it was to proclaim peace or war. At the command of the *Rex sacrorum* or flamines, all persons were expected to abstain from business, and whosoever was found violating the command was severely fined. The *feriæ* were both public and private. They were observed in private by particular persons or families on account of birth days, funerals, &c. The public celebrations were of various descriptions; of these the *feriæ latine* were feasts at which a white bull was sacrificed, and the Latin and Roman towns provided each a set quantity of meat, wine and fruits, and during its continuance the Romans and Latins swore eternal friendship and allegiance to each other, and on separating they were in the practice of carrying home a piece of the victim to every town.

This festival was instituted by Tarquinius 2d, when he overcame the Tuscans and made a league with the Latins proposing to build a common temple to Jupiter Latialis, at which both nations might meet and offer sacrifice for their common safety.

At first this peculiar solemnity lasted but one day, but it was at different times extended to ten. It was held on the Alban mount, and celebrated with chariot races at the capitol, where the victor was honored with a copious draught of wormwood drink—the qualities and palatable nature of which, at this remote period of time, we must leave others to analyze.

The ancient *nundinæ* or fairs of Rome, were kept every ninth day; afterwards the same privilege was granted to the country markets, which were previously under the power of the consuls. (*Arbuthnot on Coins.*)

Nundinæ is the name which the Romans gave to a series of letters from A. to H., which they used in their calendar. These letters were placed and repeated successively, from the first to the last day of the year, and one of the letters always expressed the market days or the

assemblies called nundinæ, &c., because they returned every nine days.

The country people, after working eight days, came to town on the ninth day, to sell their commodities and to inform themselves of what related to religion and the government.

Thus the nundinal day being under A., on the 1st, 9th, 17th and 25th of January, &c., the letter D. will be the nundinal letter the following year.

Fairs and markets, as existing in Europe, are institutions appropriated to the exhibition or sale of one or more species of goods, hiring servants or laborers, &c.; but fairs are commonly attended by a greater concourse of people, for whose amusement various exhibitions are got up.

To give them a greater degree of solemnity, they were originally, both in the ancient and modern world, associated with religious festivals. In most places they were held on the same day with the wake or feast of the Saint to whom the church was dedicated, (Jacob's Law Dic.; Art. Fair,) so that matters of business and devotion were transacted all at the same time and place.

It was always customary to hold most fairs and markets on Sundays, which custom, though prohibited by several kings, (particularly by Edward I.,) was yet held up till the reign of Henry VI., when it was effectually suppressed. In many places they are still kept in the church yard.

In the old monastic times, those religious votaries, the monks of (Maxtoke, in) Warwickshire, attended Sturbitch fair, near Cambridge, to lay in their yearly necessaries and supplies, although 100 miles distant.

The antiquity of fairs appears to have extended to far distant ages, and wherever they have existed, whether ancient or modern, they appear to have evinced a corresponding degree of industry, happiness and success.

The foundation of the ancient city of Tyre, according to Josephus, was laid about 1255 years prior to the Christian era. In the reign of King Hiram, who flourished about the time of David and Solomon, this splendid city was probably at the full height of her renown.

Her walls, buildings, towers and temples, her wise men, her pilots and mariners, her army and men of war, together with her manifold resources, formed a striking characteristic among the splendors of the East. Tyre was great, powerful and luxurious, and "her builders had perfected her beauty."

"Syria was her merchant, by reasons of the multitude of the wares of her making; they occupied in her fairs with emeralds, purple and broidered work, and fine linen and coral and agate."

"Tarshish was her merchant, by reason of the multitude of all kinds of riches; with silver, iron, tin and lead they traded in her fairs."

Chitty, on commercial law, says, since the growth of towns and monthly markets for the sale of produce, the utility and splendor of European fairs have greatly diminished.

Chaucer appears to have entertained a lofty opinion of the influence of fairs upon English society.

"It were good (says he) that the privilege of a market were given to enable them to their defence, for there is nothing doth sooner cause civility than many market towns; by reason of the people repairing often thither, they will learn civil manners."

And if the immortal Shakspeare is to be received as authority, they were not only requisite, but absolutely indispensable in special cases. Perhaps in offering good advice he says:

> "Mistress, know yourself—down on your knees,
> And thank Heav'n fasting, for a good man's love,
> For I must tell you, friendly in your ear,
> Sell when you can—you are not for all markets."

We must, however, make allowances for the age when spinsters were numerous, and venerable matrons held a controlling sway.

It was incident to a fair that persons should be free from arrest for debt, except for that contracted in, or promised to be paid, there. It was customary to hold fairs twice during the year; proclamation was usually made as to how long they should continue, and any person found guilty of selling any goods after it was ended, was subject to the forfeiture of double their value—one-fourth to the person pro-

secuting, and the remainder to the king—the oyster for the government and the shell for the people.

A toll was usually levied at fairs for privileged stalls, erected either for the sale of goods, or for entertainment or pastime.

Formerly no person could claim a fair or a market, unless by the King's grant, or by prescription, which supposes a grant. Owners and governors of fairs were to take care that everything was sold according to just weight and measure, and for that and other purposes appointed a clerk, for which he was entitled to take reasonable and just fees.

The clerk of the market was an officer incident to every fair in England, and was *ex officio* the supreme ruler of the court, known and distinguished by the dignified title of *pie poudre*. Blackstone says that this was the lowest and most expeditious of all the English courts, and it was properly called *pie poudre*, from the dusty feet of the suitors. Sir Edward Coke was of the learned opinion that justice was done as speedily as dust could fall from the feet, upon the same principle that justice was administered at the gate of the city, that the proceedings might be more speedy and public. It was a court of record, and its jurisdiction extended to administer justice for all commercial injuries in that very fair or market, and not in any preceding one; so that the injury must be done, complained of, heard and determined, within one and the same day, unless the fair continued longer.

The motive of their original institution seems to have been to do justice expeditiously among the variety of persons that resort from distant places, since it is probable that no other inferior court might be able to serve its process, and unless it had been erected the complainant must necessarily have resorted, even in the first instance, to a superior judicature.

The object of this jurisdiction was principally in weights and measures, and to try whether they were according to the true standard, which were anciently committed to the custody of the bishop, who appointed some clerk under him to inspect the abuse of them more narrowly; and hence this officer, though latterly a layman, was called the clerk of the market.

Formerly, the owner of a house next a fair, was not allowed to open his shop during the same, without paying stallage, or toll for

having a stall, on the ground that if he take the benefit of the market, he ought to pay the duties thereon; but this, like many of the early laws of England, was found to be rather arbitrary in its exactions, and it was finally complained of and abandoned.

It would be a labored task to make allusion to the endless variety of fairs which have occurred from time to time on the eastern continent, yet by way of illustration, brief allusion to a few may not be altogether void of entertainment.

The German fairs were celebrated not only on account of the great trade, but for the vast concourse of princes, nobility and people who came to visit them and partake of their diversions, from all parts of the world.

An annual fair was for a long time established at Warsaw, in Poland.

An important fair was once held at Mecca, during the resort of the pilgrims, in the month of Dhalhagga, and was frequented by many thousands of individuals, of all ranks and orders, brought together from the remotest corners of the Mahomedan world.

A fair of some extent was held in the city of Novogorod, a great emporium of the internal trade of the Russian dominions, communicating by inland navigation with the Baltic, Black and Caspian seas. It was known over all the east of Europe, and the bazaars for the accommodation of visitors are said to have formed the finest establishment of the kind that could be imagined. The stationary population of this place was from 15,000 to 16,000; but during the fair was from 120,000 to 150,000, among whom might be seen Chinese, Persians, Circassians, Armenians, Tartars, Bucharian Jews, and specimens of almost every European nation.

To a very interesting work edited by William Goodman, entitled "*The Social History of Great Britain*," we are indebted for the following interesting account of a fair held in London, on the anniversary of the birth of that worthy and respectable saint, Saint Bartholomew:

"It had its origin in the reign of Edward I., and was allowed by the charter to continue three days. The popular appetite for the amusements of this carnival had become so rampant, that in the reign of Queen Anne, a plan was set on foot to extend the period to

fourteen days. All was then a preparation for merriment, uproar and license, and every parish in the metropolis discharged its population into Smithfield, as into a vast reservoir.

"Thither went the man of *ton* from the West End, hoping to exchange the more fashionable, but not much better diversion, for some vulgar intrigue; thither went the anxious citizen and his more anxious dame, and his half-delighted, half-terrified striplings, to drown the cares of a whole year amid the uproar and confusion of a day; on one side was seen the sleek country grazier, or blue-aproned butcher, elbowing his way through the crowd to settle a bargain in hay, sheep, or bullocks; and on the other, the vintner, with his wheelbarrow of Geneva.* Here too, came the thimble-rigger with his table, and bear ward with his monkey and dancing bear; the robber, the thief, the bully and the pick-pocket, in the 'sure and certain hope' that where so much business and so much folly were mingled together, they would reap a plentiful harvest. Every thing that would allure the fancy or the palate, might be purchased for a trivial sum, amid the avenues of show-booths, and lanes of stalls, while the roar of rival show-men, the brayings of trumpets, the rattling of drums, the hammering of gongs and cymbals, were enough to make every brain reel that was not well fortified by nature against such numberless, portentous concussions."

We have thus far partially alluded to fairs as they now and have formerly existed in the old world, and we are impressed with the conviction, that however varied from those we are accustomed to, notwithstanding their grossness and apparent want of order and refinement, they nevertheless have shown a certain degree of sentiment which carries with it the associations of pleasure, prosperity and contentment. It will thus be seen that the fairs of Europe were more especially intended for the sale and interchange of various commodities. The fairs of the American Institute, we need hardly remind you, are founded on entirely different principles, and in a new country, their main object is directed to advance the good works of the native artizan, and to give publicity to the labors of the ingenious workman, to offer a proper stimulus and encouragement to the displays of agriculture and horticulture, to improve the breed of cattle, to open their library and resources to the citizen and stranger, to advance the discoveries in science and art, and to elevate every species of useful American enterprise.

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*A liquor distilled from the juniper-berry.

In a word, instruction is their aim, patriotism is their motive, and their country is the only shrine at which they worship.

To every friend of American progress, it must be gratifying to observe the encouragement so universally afforded to the National, State and Agricultural fairs throughout the country, while it can be no less gratifying to the founders of the American Institute to look back upon the influence of their earlier example, to find it, like the beacon set upon a hill, dispensing light, life and animation amid the surrounding darkness.

As an indication of the effects of native industry, let us examine some of the social combinations of any extensive manufactory, such as are found to exist on every stream of this thriving Republic.

Here you observe that the capitalist has embarked or accumulated a legitimate property in the creation of some useful domestic fabric. A hundred, and often a thousand operatives are furnished with a constant and reasonable employment, who, year after year, and by faithful attention, have been enabled to gather around them the comforts which centre in a peaceful home.

Fathers, sons, brothers and sisters, are severally employed to advance some agreeable portion of the duty assigned to them. Under the protection of a good government, they are seen to thrive; contentment is associated with them, and the smile of satisfaction is theirs; the humble fireside is lit up with cheerfulness, and they are found to stimulate each other to increased exertions and renewed happiness. A community of friendly feeling is cherished among all parties, and a desire to promote the mutual benefit of the establishment is tacitly determined upon. Thus, their attention becomes fixed to a certain round of duties, and all are gratified in the supposition that its continuance will be the means of ultimate success.

Unprotected children are often gathered from the paths of idleness and vice, and find an asylum here, where they are taught the more rational plan of advancing their own destiny. They become accustomed, and gradually attached to the scenes which surround them, and interest readily advises them to continue where experience shows that they can really do no better, and the sequel is, that with stability and attention, they become masters of an occupation, when they might not have succeeded in an apprenticeship to any other.

But let nature choke up the fountain which sends voluntary tribute to the factory wheel, and the hum of machinery, the voice of industry, and the cheerful sounds of contentment must pause and be silent; and this is equally true in regard to the protecting care they naturally seek from a wise and politic government. Let that fountain be once dried up, or let her guardian interest be withheld—whether to the man of fortune, or the poor man in the pursuit of a fortune—and not only they, but the government itself, will feel the force of the paralyzing power. We have evidence of the truth that man may be his worst enemy or his best friend; and history, throughout all ages, has illustrated that the best governments, like the happiest families, can be destroyed through mistaken discipline and the imperious acts of corrupt legislators.

It was an original principle with our country, to protect the rich and poor alike; and it is not for us to say how far this principle may have been tampered with, but when we hear the wanton cry of the rich against the poor, we can discover nothing else than the corrupt movements of the most jealous passions.

When our ears are struck with the stupid salutation "down with the overgrown capitalist"—"down with the manufacturers"—we are prompted to inquire, to what do these things tend? Let this species of vulgar prejudice, actuated as it always is by the most pitiable ignorance, once attain a sufficient power to control a majority, and agrarianism will assume the sway, and riot and disorder will take the place of truth and right, while our Republic must gradually recede to that original barbarism which devours a beastly subsistence the instinct of hunger teaches man to seek in the wilds of the primeval forest.

If the American "capitalist," from an humble station in life, and in the most cheerless walks of poverty, has, by his industry and skill accumulated a sufficient competency to stamp him with this enviable appellation, it should be conceded to him as the reward of his merits and perseverance. And if it happens to be objectionable, we have only to suggest that the English language charitably tenders a supply of others which might prove less objectionable.

Can it be true, that in this early stage of our national development, wealth and accumulation, having for their basis the stimulus of honest industry, are to be arrested in their progress, or stigmatized as errors, and as such, to be overthrown? Can it be true, that "emigration and settlement here" in a supposed land of "freedom

and equal rights" are to be checked and thwarted because the laboring man of one day, may be the "overgrown capitalist" of the next?

But strike a blow at the capitalist, and through what moral channel does the poor man become elevated? Depress our natural energies and ambition for wealth, and the vital power which affords breath and energy to education and prosperity must necessarily sink and die--for ourselves, in the language of a modern statesman, we are content to be satisfied with those "blessings of government which, like the dews of heaven, descend upon the rich and poor alike."

One of the greatest mistakes in our national diplomacy, was that of mingling the protection of American industry with party politics. and we assert this against the principle of dividing an unit, or the severance of a chain, in which one universal family have a whole, united and entire interest.

If we are disposed to look to England for her woolen fabrics, to France for her silk culture, or to Germany for her liberal arts, the scale of our own must gradually depreciate in importance. For the triumphant success of these, the time is not yet come; we are yet in our infancy, and we naturally seek the protection of our own government to aid us in these several powers of locomotion.

It has been observed that wherever American protection clashes with foreign interests, the foreigner manifests a desire of protecting himself, and is sleeplessly active in accomplishing the overthrow of all opposition; and the truth is self evident that where duties are attempted to be levied on French importations, the French merchant is first and forward in his desire of sustaining that which may more materially check his prospect of success. It is precisely the same thing with the German and English merchants, and, like the Frenchman, their political policy is influenced as the national tide ebbs and flows in regard to their financial securities.

The system is therefore wrong, and as such only we condemn it—it is not one man or any set of men, or degrees, or powers, or interests, that require the protection of the Union, but it should be the great aim of our country to seek out and cherish, while it supports and preserves the whole; and if her powers are insufficient for the purposes of general domestic usefulness, we cannot believe that she

is bound to extend her favors to foreign powers to her own disadvantage, even if they were in the least reciprocal.

And if the American manufacturer is liable to the popular odium connected with the accusation of a monopolist and an aristocrat, we are nevertheless persuaded that the results of his labors and ingenuity are redeemed by their distribution in his native land, and with his own countrymen, while the importer of foreign articles, without taxation, and often without the privilege of citizenship, accumulates an ample fortune by the servile labor of Europe, who condescendingly extends his patronage to him whom he sneeringly terms the vile American, and finally returns to his own country, (perhaps as a forgotten outcast,) to luxuriate upon that which the mistaken legislation of our own, is the means of placing him in possession of—and although foreigners are evidently not a few who accumulate these fortunes in the manner already stated, it is evident that they are not without their power in producing certain favorable feelings and results in their own behalf among foreigners who are citizens, which influence is felt at the counting room, the exchange, and the ballot boxes.

For one, we profess to believe that philanthropy which directs us to "love one another," but we are yet to learn that in a national point of view, it implies a tame submission to the dictation of ambitious strangers. On the contrary, we should like a little more of that leaven which helped to raise our nation to its present position, and in order that we may more readily identify our meaning, we shall conclude by offering to your notice, a part of the brief preface of one of the earliest, yet comparatively modern books printed in this State.

The work alluded to, is the Laws of New-York, from the 1st to the 15th session—in 2 vols.

The editor dates his preface—Printing office, New-York, January 2, 1792, and says:

"The types and paper were manufactured in this State—anxious to give public satisfaction, and fearing after the publication of his proposals that the types therein proposed to print this work upon would not hold out good to the end, the editor engaged Mr. Mappa of this city, an ingenious type founder from Holland, to cast a new fount for it, which unavoidably delayed the publication for near two months.

"However disagreeable this delay may have been to the subscribers, (as well as the editor, who suffers most by it,) it is to be presumed that the consideration of giving encouragement to the manufactures of our own state will more than compensate. The types are not so perfect as those from the London foundries, which have been improving for centuries, but no *Cash went to London* for them, and our infant manufactures ought to be encouraged that they also may improve.

"Signed, THOMAS GREENLEAF."

In this plain and honest preface is practically embodied the true idea of the system of home protection and heartfelt patriotism, and it was through such instrumentality that the printing press of this country has become one of the most formidable engines of power throughout the civilized world.

But time flies! Allow me then to solicit a steady encouragement of our own resources by every species of honorable legislation, and by every act which sustains the arm of ingenuity and enterprize, that our schools may disseminate useful learning, and that our people may become prominent among those whose services their country requires, (that when they have abandoned the things of this life, another generation may cherish their memories with respect)—"that our garners may be full and plenteous, affording all manner of store, that our sheep may bring forth thousands and tens of thousands in our streets, that our oxen may be strong to labor—that there be no decay, no leading into captivity, and no complaining in our streets. Happy is that people that are in such a case. Yea, blessed is that people whose God is the Lord."

AGRICULTURAL ADDRESS,

Delivered at Castle Garden, during the 19th Annual Fair, October 9th, 1846.

By the Hon. HENRY MEIGS.

Ladies and Gentlemen:

The American Institute had this year, as it always does, looked abroad in the republic for some citizen distinguished for talent and patriotism, to deliver the Annual Agricultural Address. It had hoped to obtain the aid of the accomplished and elegant scholar, the Rev. Mr. Choules, of Boston; but his engagements prevented his appearance before you, and I am bound to express our great regret that we cannot avail ourselves of an address from him which would have graced our annals. The Institute then immediately looked to Mr. Goodrich, the gentleman known to the public by his admirable writings under the familiar name of Peter Parley. Circumstances uncontrollable by the Institute, also prevent his appearance until within an hour.* The Institute has called me out, because it does me the high honor of confiding in my zeal in the great landed cause; and in ready obedience to their call, I beg your indulgence while I exert myself to give voice to some of the opinions and doctrines of the American Institute upon this greatest of all temporal questions. To utter a new idea in relation to it, is extremely difficult, for its best, its everlasting truths were understood, taught and practiced by the greatest men of antiquity. After a sleep of ages, during which a dark obscurity rested on the minds of men, a sudden break of the light of intelligence was seen in the glorious invention of types! Then genius found the way to fame: all questions of interest to man began to be considered and to be organized and ornamented by powerful writings, printed for the millions to read. Then uprose, from

* Fortunately he has arrived, and has just given us his talented address, another proof of his high ability and of his well known philanthropy. His words are most happily adapted to the understandings of our youth, and are received by the best of our men as words of wisdom and goodness.

the tomb of more than a thousand years, Mago, Theophrastus, Varro, Columella, and a hundred more, whose works contain the gems of the agricultural treasury. Neglected lands began once more to feel the deep plowing, the thorough work, the manure of much cattle; the yellow harvests followed; men began once more to increase upon the land; good houses, fine enclosures, noble horses, rich fruits, and the fleeces of myriads of sheep were used; the silk worm was set to work; cotton began to grow, and the mighty results now attained, cause in us a feeling, almost of wonder, at the stupendous progress already made by man. The press is the fountain of all these great movements. Before that existed, nothing could be done by the millions of our race. *That is the breath of man, lecturing his whole race* upon every subject of value. It is a trumpet, speaking to the utmost parts of the earth. It proclaims the sentiments of all ages and sages; the ancients and moderns, by the press-music of such *Harpers* as live now, harmoniously sing together the true doctrines of more than twenty centuries.

About the same time that the press commenced its mighty career, America was disclosed to the wondering millions of the old world. Romance awakened at this giant birth. It was deemed by some the vast Island of Atlantis, a thousand miles wide, where millions of powerful warriors lived, where mammoths were used for cattle, where gold and diamonds were thick as pebbles. And when our Florida was first visited, the Spanish cavalier believed the *Indian romance* of the spring of eternal youth, situate in the interior of that flowery land, and hoped to drink of its water.

With these high fancies, they roamed over this new-found land. They almost realized the dreams of gold in the regions of Mexico and Peru; but their dream gradually wore away, and disappointment came. Our Anglo-Saxon ancestors, more than one hundred years afterwards, came here without any of these vain ideas, and they found a gold worth mountains of the metal—they found the golden Indian corn; they found the potato, and that luxurious weed so loved by savage and by civilized man—tobacco! These peculiar plants are ours, and it now seems that our corn is destined to be of a value superior to all the other productions of the earth. Its constitution resembles that of man—capable of growing in almost any climate; growing in the cold regions of the Continent some three feet high, and in the warm South eighteen feet high, varying in its qualities in every different position, and never failing in doing something for its planter, except in very extraordinary circumstances. I am resting on

this corn question, because the destruction of the potato in Europe, must render it to us a matter of humanity, as well as interest, to see that next year there be *Indian corn for all.* Wheat and rye cannot fill readily the place of the potato, nor are they, in my opinion, entitled to take the place of Indian corn. That corn is a stronger food for man and cattle than wheat or rye, is a fact that has been deliberately proved, and we know it to be true.

Without any expectation that Europe would call upon us for it, we have raised this year, as is believed, *four or five hundred millions* of bushels of Indian corn! Next year, if our farmers are sure that the old world wants it at fair prices, they can raise *a thousand* or fifteen hundred millions of bushels of it, just as well as let it alone! and a year after, they can double that last amount, for our land can raise corn enough to feed the whole human race, without lessening our crops of cotton, tobacco, sugar, rice, or anything else.

Our land is under every climate, from the frozen North to the sunny South, and of every grade, from the low lands of the river's mouth and the valleys, to the snow-tipped Rocky Mountains. We shall, before two centuries pass, have grapes on every farm, silk in millions of cocooneries, myriads of sheep, "cattle on (more than) a thousand hills," the lightning of Heaven for our correspondence, the speed of the swiftest birds for our conveyance, and, I do firmly believe, a literature of our own, untainted by immorality or irreligion. Vice grows not but with extreme difficulty in a free, farming republic. The Sabbath to the farmer, is of indispensable necessity. He feels the true force of the Divine rule—six days shalt thou labor, and rest upon the seventh. His strong body requires that repose, and his habitual association with the beauties of nature render him a ready and steady attendant upon the worship of the Almighty.

To be up and doing, in the present progressive movements of the age we live in, the American Institute deems to be every man's duty, and while it ardently recommends progress in every art and in every mechanical branch, it still adheres to the first title in its charter—agriculture, with determined perseverance.

The Institute has taken hold of the last noble advice of Washington to his country—that of establishing a National Department for Agriculture, by means of which the farmer shall have brought from every part of the earth, every plant and every animal that can be found agreeable or useful to American citizens. The National Con-

vention of farmers, gardeners and silk culturists, now in session in this city, yesterday adopted resolutions, unanimously, for a call on Congress for the establishment of Washington's agricultural department; and we hope that every man who hears us, will lend his hand to that noble work.

No great or good man has ever doubted for an instant, that to till the soil is Heaven's first law to man, nor does any man doubt that it should be done well, done with all his heart and strength and understanding. That it is a work never to be slighted; never to be viewed except as the most noble of all his labors, and above all does it demand the first rank in a republic. Even despots know this, and always did; but the nature of their governments always rests upon the ignorance of the people in all things, even in the cultivation of the soil. It is true, that their eyes have been opened, within the last fifty years, to the absolute necessity of showing interest in the farmer, and you now see them taking measures favorable to that cause. Let us keep ahead of them! We have all that God can give to induce us to exertion, and the certainty of success, if we do but try it.

In the old agricultural society of this State, in the year 1799, Simeon Dewitt, a distinguished member, delivered an address in the city of Albany, from which I will extract a few sentences, which appear to me worthy of repetition:

"By what institutions for the furtherance of useful knowledge, or by what extraordinary efforts of our citizens to advance the arts of peace, truly patriotic, have we distinguished ourselves? A university, colleges, and academies we have, it is true; they serve to save us from the shame of not following the fashion of nations. What more have we to boast of? How few of our learned characters step aside for a moment from their professional employments to show themselves interested in diffusing a taste for useful philosophy and works of ingenuity.

"While millions heaped on millions are expended to protect the interests of the small proportion of Americans who have chosen navigation as a trade, certainly a little bestowed *or even thrown away* with a good intent for the promotion of agriculture, cannot be deemed a misapplication of money! What other institution can there be conceived more deserving the patronage of a Legislature than this? Has it any thing for its object that does not directly aim at the happiness of mankind? The lessening of labor, that first

curse pronounced on man after his loss of innocence, is its principal view. It aspires to the procuring of every enjoyment which the earth presented in the Golden Age, as sung by the poets in strains the most enthusiastic and sublime. On such themes the good man's meditations delight to dwell. The Elysium of Pagans, the Paradise of Mahomet, and perhaps also the Heaven of Christians, would to the view of mortals, lose much of their attraction, were not the descriptions of them decorated with agriculture sceneries. While passions like demons tear the breast of the politician, gnaw like vultures on his vitals, spread a gloom over his perspectives and embitter his days, the heart of the philanthropist expands with a seraphic joy, bounds with god-like palpitations, feels emotions of ecstacy ineffably exquisite, as his eye roves over fields when the golden harvest waves to the wind—where every shrub and plant is loaded with dainties—where every tree bends under its fruit, and all things seem to invite us to partake of these bounties and be happy.

"If then these things are pure, uncontaminated fountains whence human happiness flows, surely we cannot contemplate them with a stoical indifference, but as citizens, as christians and as legislators, must join our endeavors to cherish and support them."

Now let us hear a few words from James Kent, the learned and just judge—who in his address to that society, delivered in the City Hall of this city, in 1796, just fifty years ago, said, among other admirable things:

"It is certainly a precious advantage attached to the agricultural life, that it leads to no intemperate avidity for wealth, and inspires bold and generous sentiments of freedom and independence. Although the remark be perhaps too strong that cities are the graves of the human species, yet it is obviously true that the farmer's life, from the use of wholesome air, abundant exercise, *moderate pleasures* and simple diet, is by far the most favorable to health, longevity and population."

Here, fellow-citizens, are two votes for the great cause, registered half a century ago! And there is not one good and great man now living, but will, if he can get a chance, cry aye, to the same doctrine. But farmers are intent upon their work, hardly once in the year aroused by an election and its noisy demagogues to put in his ballot. Let him put off that inattention and see that the men he votes for know and care for the great agricultural cause. Our far-

mers have but to will it, and no power on earth can prevent their having all they demand. Let them now come to the polls and say that Washington's department for agriculture shall be established! Then they will soon see every officer of army and navy—every Minister and Consul—every captain of merchant vessel, under directions to bring home, form the uttermost parts of the world, every seed, plant and animal, every appliance to farm and garden labor, every valuable book, every true account of the properties and uses of what they bring home—all the transactions of agricultural societies from every nation, and each farmer admitted to a correspondence with his great agricultural secretary, and to a share of the precious things and precious knowledge thus condensed in Washington's Department for Agriculture. And the American Institute will never cease to join you noble farmers of the American Republic in establishing this system of the glorious father of his country, while they have a dollar, a pen, or a voice left!

ADDRESS DELIVERED

During the 19th Annual Fair of the American Institute, held at Castle Garden.

By the Hon. GEORGE FOLSOM.

Mr. President, and Ladies and Gentlemen:

It affords me unmingled gratification to respond to the call of the Directors of the American Institute, by offering a few remarks on this interesting occasion.

The objects of this association are such as appeal strongly and deeply to every American heart. Truly national in their character, affecting to a greater or less extent the pursuits, the interests, the happiness and welfare of millions of our fellow citizens. Patriotism itself demands their encouragement, and awards the meed of honorable renown to those whose philanthropic labors are devoted to the promotion of these noble objects. I should deem myself recreant to the love I bear my native land, false to the warmest and holiest impulses of my heart, were I to be backward in a cause that involves the prosperity of all the great interests of our common country, the great cause of American industry. Whatever promotes this contributes to the welfare of multitudes of our countrymen of the present and future generations. Our children's children will experience its benefits; and the future exile who has not yet left the desolate shore of the old world, but is destined hereafter to find amongst us a refuge and a home, will come in for a grateful share of the guerdon that springs from the progress of industrial improvement. The rapid strides made of late years in the application of the useful arts to the wants of mankind, as seen in the more advanced stages of civilization and refinement, may be traced to the more perfect knowledge of the laws of the material world, acquired by men

of science, and generally diffused. Indeed, most of the remarkable fruits of human ingenuity by which the present age is distinguished, are but developments of natural laws, rendered subservient to artificial purposes. The curious machines employed in the manufacture of cotton and woolen fabrics, performing the offices of a thousand hands, and exhibiting in their multiplied operations all but the power of thought; the triumphs of steam, with its locomotive energies outstripping the winds, and bidding defiance to the most vigorous exercise of animal power; the phenomena of electro-magnetism, as displayed in the wonderful invention of the telegraph—what are these but familiar instances of a successful application of physical science to the practical purposes of life, and some of the rich fruits of that philosophy which explores the mysteries of the natural world.

It is sometimes useful to recur to former periods in the history of our race, and contemplate the social condition of mankind as it then existed. But it is not necessary for the purpose of contrast, to go back to the time when our Saxon ancestors roamed in the forests of Europe, and subsisted on a precarious supply of the spontaneous productions of the earth; when the art of agriculture was unknown, and that of building did not extend beyond the construction of a wretched hut, scarcely serving the purpose of shelter. We have only to revert to a period not long antecedent to our own times, to find striking contrasts in all that contributes to the well being and happiness of our species. Even within the recollection of some who hear me, what numerous additions have been made to the stock of human comforts! what improvements in the management of light and heat! what increased facilities of communication between distant points, until space is literally annihilated! how have the products of the loom been perfected and cheapened, until the luxuries of dress are brought within the most limited means, thus breaking down one of those walls of aristocratic partition that served to divide society in former times.

The following description, intended to represent the condition of an Englishman of moderate means at the present day, applies with equal truth to a much larger class in our own country. "I am lodged," says the Englishman, "in a house that affords me conveniencies and comforts which even a king could not command some centuries ago. Ships are crossing the seas in every direction to bring what is useful to me from all parts of the earth. In China, men are gathering the tea leaf for me; in America they are gathering

cotton for me; in the West India Islands they are preparing my sugar and my coffee; in Italy they are feeding the silk worms for me; in Saxony they are shearing the sheep to make me clothing; at home, powerful steam engines are spinning and weaving for me. Although my patrimony is small, I have post coaches running day and night on all the roads to carry my corespondence. I have roads, and canals and bridges to bear the coal for my winter fire; nay, I have protecting fleets and armies around my happy country to secure my enjoyment and repose. Then I have editors and printers who daily send me an account of what is going on throughout the world, and in a corner of my house I have books! the miracle of all my possessions, more wonderful than the wishing cap of the Arabian Tales; for they transport me instantly not only to all places, but to all times! By my books, I can conjure up before me to vivid existence all the great and good men of antiquity. I can make them act over again all their exploits. The orators declaim for me; the historians recite; the poets sing; and from the equator to the pole, or from the beginning of time until now, by means of my books, I can be where I please."

So wonderful an improvement in the social condition of mankind, is chiefly due to the discoveries made in physical science within the last half century. During that period, new roads have been laid out, (to use a homely illustration,) from various points to the temple of knowledge, traversing fields of science hitherto neglected or unknown. Various branches of natural philosophy, almost the entire systems of chemistry, mineralogy and geology, and the art of civil engineering, are amongst the triumphs achieved by the human mind within the recollection of many persons now on the stage of active life. The nations of antiquity excelled in the cultivation of the fine arts, and in works of taste and imagination. The beautiful remains of Grecian architecture are still regarded as the most desirable models of public edifices, and the productions of Grecian statuaries have never been surpassed. But in all that relates to a knowledge of the laws of nature, the wisest of their philosophers had less accurate notions than can be acquired by the merest child at the present day. Hence their progress in the useful arts was limited, and in comparison with the present age, the most cultivated nations of antiquity were in these respects but little removed from a state of barbarism.

The merit of having first made known the true method of investigating natural phenomena, and thus giving an impulse to the study

of natural science, is usually ascribed to Lord Bacon. The philosophical writings of this great man were the text books of succeeding generations, and guided the minds of such inquirers as Newton, Priestley and Franklin, whose brilliant discoveries were amongst the earliest fruits of the new philosophy. From their days to the present, a constant progress has been made in natural science, with which the cultivation of the useful arts has not failed to keep pace. One brilliant discovery has succeeded another, until it has become difficult for the imagination to conceive what will be the next achievment of science. The flight of a balloon with passengers across the Atlantic, or a visit to the moon by a similar conveyance, would produce scarcely less astonishment than was excited by the operations of Morse's magnetic telegraph, when first communicated to the public. What wonder next? is now the anxious inquiry; and Morse shares with Herr Alexander the reputation of being the greatest magician of the age.

One of the objects of the American Institute is to encourage the application of science to practical purposes. This Institution had its origin during the gloomy period of the war of 1812, when the wants of the country led to associated efforts for the encouragement of the useful arts, especially as applied to domestic manufactures. For this purpose an association, called the American Society, was formed in this city at that period, under the auspices of the Order of Saint Tammany, and flourished for a number of years. It enrolled among its members all classes of politicians, who vied with one another in the encouragement of domestic industry. At a subsequent period that association took the name of the American Institute, or was merged in this institution, under an act of incorporation passed in 1829. The objects that its founders had in view, are briefly stated in that act to be "for the purpose of encouraging and promoting domestic industry in this State and the United States, in agriculture, commerce, manufactures, and the arts, and any improvements made therein, by bestowing rewards and other benefits on those who shall make any such improvements, or excel in any of the said branches; and by such other ways and means as to the said corporation or the trustees thereof, shall appear to be most expedient." To these legitimate and important objects the labors of the Institute have been strictly confined, with what success it is unnecessary for me to state; for, were other evidence wanting, the present magnificent exhibition is enough to convince the most sceptical mind of the triumphant results that have crowned the unwearied efforts of its officers and members.

Where all are entitled to so much credit for the part respectively borne in this good work, it may be deemed invidious to discriminate; but I cannot forbear to allude to the distinguished services of the late Col. Few, who was for several years the presiding officer of the old American Society, and afterwards of the Institute, under its new name and charter; and also, of the late John Mason, Esq., a most active and efficient presiding officer, and patron of this Institution. To the recent president, General James Tallmadge, who for more than fifteen years devoted his personal energies and influence, his great talents, and an unwearied zeal to the promotion and encouragement of American industry, a warm tribute has been already paid by his worthy successor, who now presides over the destinies of this Institution. To the services of such men—the real benefactors of our country—the public seem to lay claim as a matter of right, after so long possession; and were it not so, the disinterested zeal of that gentleman, in a cause of such universal interest, will scarcely suffer his energies to be diverted from their usual channel, although no longer exercised in an official capacity.

It has ever been the policy of enlightened governments to cherish the cultivation of the useful arts. Even despotic rulers have sometimes resorted to this means for the purpose of augmenting the resources of their dominions. It is well known that a former Emperor of Russia went so far as to enter a workshop in Holland, and labored with his own hands, in order to acquire a knowledge of the art of ship-carpentry, that he might the more effectually introduce it among his subjects. In other countries, liberal bounties on articles of domestic production, and an almost entire exclusion of foreign wares, have been among the means used to promote the growth of the useful arts at home. In this way, they have not only supplied the wants of their own people from their own workshops, but opened new avenues of trade with foreign and less enlightened countries.

In this country, we boast of a model government, in which the people are their own rulers, and the incumbents of office nothing more than agents appointed by the mass of the community to frame and administer the laws, and shape the intercourse with foreign nations. Such being the case, these agents should be held to a rigid accountability, and when unmindful of the true interests of the people, or disposed to favor one interest at the expense of all the rest, should be required to give place to others who will more truly represent the views of their constituents. But excellent as is the theory of our government, its practical operation is sometimes defective. The pub-

lic man too often asks what is the interest of his party, rather than what is that of the community at large. Within my own brief experience in public affairs, I have seen measures of the most pernicious tendency advocated with zeal and ingenuity for the purpose of securing a little political capital. And it is but three or four years, since a representative of this commercial city—the great emporium of the Union—denounced in his place the whole mercantile class amongst us, for no other reason, as he shamelessly avowed, than that he had not received their votes! It was pretty evident that they had duly appreciated his character.

It might be expected, under a popular government, that measures would be taken to foster and encourage the useful mechanic arts, as connected with the practical pursuits of life, and to stimulate and reward inventive talent. But here again, sectional interests sometimes come in to defeat the will of the people. Impediments, instead of incentives, are thrown in the pathway of genius, and the industry of foreign countries encouraged, instead of our own. Thus is the beautiful theory of our political institutions sacrificed to party objects, and the whole machinery of our model republic used for the mere purpose of elevating party hacks to office.

Wanting the protection of the government, the domestic industry of the country must seek its support amongst the masses of the community. To them should the appeal be made to come forward in solid phalanx, to protect their common interests by encouraging American labor, and counteracting, by all lawful means, the suicidal policy of the government. Voluntary associations afford the best means for effecting this object. Efficient and united action may yet place American industry on a firm foundation, and render our country independent of the workshops of Europe.

ADDRESS

Delivered by the Hon. Henry Meigs, to the Pupils of the Blind Institution, while visiting the Fair.

Dear Pupils:—

The American Institute requests me to say to you how great a satisfaction it derives from the demonstration you have now given, that although the Almighty has shut your eyes, yet that he has attuned your souls to strains of harmonious melody, and in that concord of delightful sounds has given you a sense of pleasure which the human race with its eyes opened, enjoys to so high a degree, that from all antiquity to this moment, the enchanting strains of music have formed one of the most constant, pure and delicious entertainments. And music, dear pupils, is always the result of delicate, of cheerful, and of religious feelings. The song of the lonely shepherd cheers himself and his flock! The hymn of the worshipper in every age rises to the heaven he would attain. In ancient fable, Orpheus drew around him the beasts of the field, who felt the subduing power of his concords. Music hath power to charm the savage breast, and to lead man to rapture by its power. You know how Collins painted its powers in his ode—"When music, heavenly maid, was young." Collins did exquisite justice to song, and let me remind you of the ode of the sightless Milton. Speaking of that light of which he, like you, was deprived, hear his beautiful verse:

"Hail holy light! offspring of heaven, first-born —
Or of the Eternal, co-Eternal beam —
May I express thee unblam'd? since God is light,
And, never but in unapproached light
Dwelt from eternity, dwelt then in thee,
Bright effluence of bright essence, uncreate.

* * * * *

Cut off and for the book of knowledge fair
Of Nature's works, to me expung'd and raz'd.
So much the rather, thou celestial light,
Shine inward, and the mind through all her powers
Irradiate — *there plant eyes;* all mist from thence
Purge and disperse, that I may see and tell
Of things invisible to mortal sight."

How consoling to your minds must it be to know that Milton, without sight, was able to enjoy an intellectual light of the most sublime lustre; not only to be filled with the most celestial visions, but to dictate them to his children, who have recorded them for all ages.

And now, among the numerous evidences of Christian civilization acting among modern men, the blind and the dumb have become pupils of science and art, and partakers of human care and Christian charity. Art is exerting its power for your instruction. You have a Bible, that Book of Books, worth more than all the libraries of the world, so printed that by the delicate touch of your fingers you are empowered, as perfectly as those who see, to feel the holy words and understand their meaning. The Institute feels deeply for your welfare and, as it incessantly watches for the development of the exhaustless genius of our country in every branch of art, it will encourage every effort which tends to advance your means of happiness in this world, with a humane desire to impart to you every thing that can inform or delight those who have the blessing of sight, and knowing that the bright gem of genius is often hidden, they will not lose any opportunity to bring it out to view.

You have heard of Gray's Elegy. Let me repeat a verse:—

"Full many a gem, of purest ray serene,
The dark unfathomed caves of ocean bear—
Full many a flower is born to blush unseen,
And waste its sweetness on the desert air."

The American Institute will keep its eye upon you, and if it can, it will see that the diamond genius within you capable of brilliant light shall not be hidden, any more than your concord of sweet sound shall be lost upon the ear. It advises you to gain pure knowledge and, when you have it, to give it to your fellow men as Milton did. So shall you, without sight, distinguish yourselves as men and secure hereafter the everlasting light of Heaven.

The band of blind musicians, being deficient in a violoncello, one was then presented to them by the American Institute. The audience which was great, expressed their gratification, by loud plaudits.

ADDRESS

Delivered at the close of the 19th Annual Fair of the American Institute, at Castle Garden, Oct. 23, 1846.

By Adoniram Chandler, Esq.

We come now, fellow-citizens, to close the Nineteenth Annual Fair of the American Institute, and return you our thanks for the countenance and patronage which you have afforded us. It is our design to benefit, in some measure, the great and diversified interests of labor throughout the land. We regret to meet you this year under circumstances calculated to discourage, to some extent, that portion of our friends who are engaged in many of the mechanic arts and manufactures. It is our belief that the cloud which has gathered to embarrass their progress, will soon be made to pass away. The aid of the artisan and manufacturer is essential to the great community of laborers who *must* occupy the vast extent of this Union. So intimately are their interests interwoven, that they are indispensable to each other. There is a necessity for all, employment for all, room for all, and there should be protection for all. But prejudices are yet to be removed, truths to be established, demagogueism to be exposed, and many, very many, of our fellow-men to be enlightened in regard to the true interests of labor, as connected with, and essential to, the progress and destiny of this vast empire.

What have we to do with the theories of other men or nations, in regard to our intercourse with the world, or the regulations of our own domestic economy? There is no nation on earth like this. Our government is different, soil and climate different, and our habits are different from all other nations. Government here was designed to be such as should exercise a paternal watchfulness over all our rights and interests. Our habits are proverbial for industry and enterprise; and nature has strewed the land we inhabit profusely with all that industry could desire, or enterprise ask for. All these great resources, were they not in rapid progress of development?

Do not the evidences by which we are now surrounded speak trumpet-tongued in confirmation of this truth? We have, indeed, fallen upon evil times, or, at least, under the guidance of strange counsels, when this nation is made to halt in its onward march in prosperity, to test a theory which is foreign in its origin, irrational in its conception, and at war with common sense. Such, at least, is the opinion which I entertain of the theory of Free Trade.

We are tauntingly told from day to day, that "protection is henceforth to be counted among the things that have been." That "a freeman's labor is not entitled to the protection of his government." We would thank them to tell us what this republican government was instituted for, if the protection of its labor, above the serf labor, which belongs to kings and despots, be not among its cardinal duties. What was the object sought to be accomplished by those patriots whose blood and treasure achieved our independence and severed this empire from the grasp of Britain, if it was not to elevate the mass above bondage and servility? That every man might stand erect in the image of his Maker, and, whilst yielding obedience to God's mandate, "*in the sweat of thy brow shalt thou eat bread*," to feel and proclaim that the curse was not denounced against him alone, but against every man.

What constitutes the wealth of a nation? Its labor. What gives us health and muscular strength, and enables us to discharge the duties of citizens? Labor! It is the inheritance of man to labor. Not as the serf labors, as ignorant of the tools he uses, or the machine he operates, as the ox is of the plough before which he toils; with scanted food and miserable raiment; with hovels to repose in and thongs for his back to suit the caprice of a lordling! But reasonable labor and reasonable rest, compensated in amount sufficient to afford the necessary comforts of life, that he may train up his offspring "in the way they should go," and provide moderately for his declining years. This cannot be accomplished without a diversity of labor, so that each may minister to the wants of the other, and all move on in one harmonious whole. For this we ask protection. If a freeman cannot rightfully demand it from his government, his government is a mockery.

It is our belief that the tendency of recent legislation is to reduce the free labor of this republic to a level with the serf labor of the old world. I shall endeavor to show, that although it professedly strikes at the monopolist, the blow is aimed at the mechanic and

manufacturer, and if felt at all, will most assuredly vibrate through every department of labor. The pretence for this strange anomaly in legislation is, that Britain has boldly, liberally, *graciously*, made an advance towards Free Trade, and we are bound to follow her generous example! Let us briefly look at the plain facts in the case, and leave it to the common sense of mankind to say what this mighty advance in Free Trade amounts to, which has been so potent as to arrest the progress of a nation of freemen in its march to greatness.

The British empire contains a population of 158,000,000. England, Wales, Scotland, Ireland, and the British Isles, under the designation of the United Kingdom, embraces only 27,000,000 of this vast population. She has, of late years, permitted other nations to bring within reach of this 27,000,000 of her people, a specified number of articles which she cannot produce, under a system of nominal duties, with slight discriminations in favor of her own subjects, and in some instances, with neither duty nor discrimination, leaving all intercourse or trade with the balance of her population, amounting to 130,000,000, subject to endless restrictions, discriminations, countervailing laws and regulations in favor of her own subjects and her own commercial marine.

In the United Kingdom, 2,470,411 of her male adult population have been employed in agriculture, with protecting laws, which excluded the products of other countries, unless this twenty-seven millions of her people, or a very large portion of them, at least, were at the point of starvation. This was the effect of the memorable corn laws, for the benefit of her landed aristocracy. It at length became very apparent, that, notwithstanding her extraordinary efforts in agricultural production, her people were miserably fed, and at prices too, which materially interfered with all other branches of her productive labor. The warfare against these laws has been carried, by her own starving people, to a point which compels the aristocracy to yield. Will any fair-minded, intelligent man say the repeal of these corn laws has not been the result of compulsion? And yet, ever ready to make a virtue of necessity, she claims that the act is a boon to free trade! That there should be found in this enlightened republic, men high in station and powerful in adherents, ready to accept it as such, and shape the legislation of this mighty empire to suit the views of Britain, because of it, surpasses my comprehension.

Britain repeals her corn laws, or rather modifies them, so that wheat and flour may come in from other nations at a duty of 31½

cents per bushel, whilst it comes in from her colonies at three cents per bushel. This is to continue for a period of three years; when, if she does not see fit to alter her law, it may come in from all quarters at three cents. She admits beef and pork free. She must have it to supply her immense armies and navies, and she cannot produce enough herself. She admits butter at five cents per pound, and cheese at 2½ cents, with discriminations in favor of her colonies. She admits raw materials, such as compose her manufactures, which she cannot produce at all, or not in sufficient quantity. For instance, cotton, coarse wool, raw hides, wood for cabinet ware, dyeing materials, &c., free of duty. All her manufactures, which are not protected by her skill, she protects by statute; and this is the great advance she has made in free trade! It is British free trade. Her emissaries are abroad in every land, and in every capacity, who fail not to echo—free trade! Partisans, to our own local jealousies, and demagogues, have united in the clamor for free trade; and the honest industry, the free labor of the country, is to be shorn of its fair reward, prostrated and ground to a level with the serfs of Europe.

The reason assigned for this change cannot be satisfactory to the laboring portion of the people. At one time, the revenue was said to exceed the necessary wants of the government, and must be reduced. At another, it was not enough, and must be increased. Is the tariff, which was proposed in 1845, and adopted in 1846, calculated to accomplish both these objects? to work either way by turns, as may be deemed most desirable? To my mind, it is a novel method for increasing revenue; first, to break down the ability of a people to consume, and then force upon them a double dose of foreign fabrics. The idea that we are bound to meet the liberal legislation of Great Britain with corresponding liberality, is unworthy an American, because there is not a particle of liberality in it. She has legislated against her agriculture, and in favor of her manufactures, by compulsion. We have legislated in favor of our agriculture, and against our manufactures. If meeting her, means meeting her wishes, then have we done all that she desires.

Great Britain, from her earliest history, has preached free trade. She has sent her Adam Smiths into every land, and translated him into every tongue, but has never put in requisition any of his precepts. Discrimination, restriction, and prohibition, has been her policy from the beginning to this day.

By the tariff of 1846, the idea of protection to American labor is wholly repudiated. The rate of duties on foreign articles, coming in

direct competition with our own products, have been reduced, and our own labor taxed with additional duties on the raw materials used in the manufacture of them. For instance, coarse wool has been raised 25 per cent.; mahogany for cabinet ware, 5 per cent.; all other kinds of wood, which enter largely into various articles of manufacture in the hands of the mechanic and artisan, 30 per cent.; bark of the cork tree, which gave employment to many, 15 per cent.; dyeing materials, 5 to 10 per cent.; burr stones unwrought—many earn comfortable livings for themselves and families in preparing these stones, but this tariff puts a duty of ten per cent. upon them; India rubber, 10 per cent. There are not a few who earn a living in this vocation. Palm leaf, unmanufactured, which gave employment to a multitude of females, 10 per cent. Shame, to strike them down! Rattans and reeds, 10 per cent.; tin in sheets or plates, with which our culinary vessels are made, giving employment to thousands, 15 per cent. Most of the above articles, under the tariff of 1842, *came in free.* Paper is made to pay a duty of 30 per cent., whilst books, printed and folded, can come in at 10 per cent. I would ask any intelligent printer, if this does not strike at the paper maker, type founder, stereotyper, ink maker, and printer, at the same blow, in favor of the foreign operatives in those branches? Besides, it will enable foreign authors to furnish the great mass of American readers with just such literature as they please. If perchance it should be deemed politic, Britain may employ a dozen Adam Smiths or more to indoctrinate our people fully in her peculiar notions of free trade!

Great Britain employs in her manufactures 710,531 of her population, against 2,470,411 employed in her agriculture. She has been compelled to legislate against the latter, and in favor of the former. She will undoubtedly strive with her utmost power to force her manufactures into every land, because she knows it to be the surest source of national wealth and greatness. It is a remarkable fact, that from 1760 to 1840, a period of eighty years, the exports of Great Britain greatly exceeded her imports, with the exception of the years 1781, 1784 and 1811. In 1760, her exports over her imports was $28,-232,191 in value, and the increase has been constant up to 1840, when the excess of her exports over her imports reached the enormous sum of $232,334,636 in value, and this was mainly the product of her mechanical and manufacturing skill, after supplying the demand for home consumption, which she secures entirely to herself, furnishing thereby a market for four-fifths of her whole product. In 1836, Spackman informs us, that her total exports, with the excep-

tion of less than two millions sterling, were the product of her manufactures. This is the mighty engine with which she has, and still intends to control the world. Look at the disparity between the products of agricultural and manufacturing labor. One pound of Sea Island cotton, which produces to the planter 20 to 25 cents, when spun into yarn for the manufacture of lace, is worth $5, and when converted into lace, which is mainly done by machinery, its value is raised to 4 and $500. The consumption of this article is immense; its amount in the United States we do not know, but in England the annual consumption is estimated at $5,289,600. This is a branch of industry which, under wise counsels, might be introduced here, to the annual saving of millions of wealth to the country, besides furnishing employment to multitudes of our own people. But it is deemed wiser to sell the cotton for 25 cents per pound, and pay $500 for it in the form of lace, by way of promoting free trade! Whilst Britain, in the agony of her desire to advance the principles and doctrines of free trade, charges us a duty of 24 cents on 100 lbs. of rice, if cleaned, but if in the husk and requires cleaning, she lets it in at 3 cents per bushel, and thus scrupulously protects her own labor!

Look at the productive industry of Massachusetts, which the tariff of 1846 is aimed at. Mr. Lawrence tells us "that in 1845 she consumed of the products of the States out of New-England, $40,000,000 in value. These consisted in cotton, lead, wool, sugar, coal, iron, flour, grain of all kinds, pork, beef, lard, tobacco, rice, &c. The flour alone was more than the whole export of the United States to foreign countries. These were paid for in the products of her labor, affording a steady and increasing market." We are further told, "that the value of her manufactures in one year amounted to $114,478,443, giving employment to 152,766 hands. Of this amount cotton was $12,193,449; woolens, $8,877,478; boots and shoes, $14,478,443!!! Boots and shoes alone are nearly equal to the entire amount of agricultural products exported from the United States to all the world, cotton, rice and tobacco excepted." For this latter statement we are indebted to the official returns.

You all know how very fruitful, in the declamations of the demagogue, the slang terms of "monopolists of Lowell," and the horrors of the "cotton mill with its famished operatives," have been, in their crusades against the industry of the country; and yet these tables instruct us, that cottons and woolens, with boots and shoes, constitute less than one-third of the annual value of the manufactures of

Massachusetts. What makes up the other two-thirds of this vast amount? Is it not the labor of her mechanics and artisans, acting mainly for themselves, with their own capital, and the labor of their own hands? Suppose a blow aimed at this productive labor should prove effective, and drive 152,766 hands in Massachusetts into the pursuits of agriculture. Can any one doubt that an immense injury will have been inflicted; not on them alone, but on the whole country? And when the mechanical and manufacturing industry of all New-England, with New-York, Pennsylvania, and large districts of other States shall be made to feel the blow, will the planting and grain producing States and districts feel nothing to disturb their repose? The benefit they may expect to derive from such a course of legislation will be fleeting as a moonbeam, whilst the injury that may be inflicted will endure until their day and generation has passed away.

Let us ask what are the probable benefits which are to result to the planting and agricultural interests? Is cotton to be benefitted by lessening the home demand and increasing the quantity produced? The tendency of the present tariff is to destroy all the small and weak manufactures of cotton. How many may be driven into the production of the raw material, we cannot say; but the cotton district, under the tariff of 1842, began to show factories in successful operation. We have specimens before us, which are a credit to Georgia. Will tobacco be benefitted? Not a whit of the enormous exactions upon this product has been relaxed by British free trade. Is sugar to be benefitted? We all anticipate a reduction in the price of this article. If so, the sugar planters may become cotton planters to some extent. But the producers of bread stuffs are to reap the golden harvest! The voices of Illinois, Indiana, Michigan, Pennsylvania, part of New-York and Ohio, have drowned all reason in their clamor for free trade, and to them belong the spoils.

On the subject of supplying Great Britain with bread stuffs, enough has been said to convince the most sceptical. Our own argument has not been refuted; and we still maintain as the doctrine of the American Institute, that with open ports in Great Britain, her supply will not be obtained from the U. States, nor any considerable portion of it, except in seasons when there may be a general failure in the crops of Europe, which will rarely occur. If Great Britain could have annexed the soil of one of our States to the United Kingdom, I doubt whether she would have relaxed her corn laws for a century to come.

From 1699 to 1799, the exports of wheat and wheat flour from Great Britain greatly exceeded her imports. From 1800 to 1842 her excess of imports over her exports, was 324,331,680 bushels, being an average of 7,722,182 bushels per annum. From 1837 to 1842 inclusive, her imports over her exports were 87,730,080 bushels, being an average of 14,621,680 bushels per annum. From 1828 to 1840 inclusive, a period of twelve years, her imports of grain and meal direct from the United States, was 1,070,088 bushels, being an average of 89,174 bushels per annum; whilst her imports from Prussia alone, during the year 1840, was 6,400,000 bushels. The foregoing is from Spackman's Statistics of the British Empire for 1843, and show conclusively that the quantity shipped to England from the United States, during the period alluded to, was of no consequence at all, in a national point of view, still the fluctuations in the prices of bread stuffs consequent upon an expectation of great demands from England, extorted from the laboring poor of our Atlantic cities millions every year, in which the producers rarely participated. It was swallowed up by greedy speculators and monopolists; and they, in turn, were occasionally overwhelmed by their own avarice. It was during this period that the memorable flour riots and sacking of flour stores occurred in New-York. Could the laboring poor of the sea board have stipulated to make a gratuity to England, each year, of all she actually did receive from us, on condition that any further supply should be prohibited, the poor would have been gainers to the amount of millions!

The fluctuation in the price of flour for one month past, will serve to illustrate what has been stated, to some extent. On the 19th September last, flour was selling at $4.75 per barrel. The news by the succeeding steamer, that flour was selling at $6.72 in England, caused an advance here to $5.62. Now if we add this to the present duty, which is $1.52 per barrel, and freight 60 cents per barrel, our flour in England would cost $7.72; one dollar per barrel more than it was selling for at the then last advice. Up to the arrival of the steamer of the 4th inst., which was on the 21st, flour had declined a little, but the announcement by her that flour was selling at $8.40, carried our flour up immediately to $6.50 for best qualities; which with freight and duty added, makes it 20 cents per barrel more than it was selling for when the steamer left.

In December, 1845, when Belgium, Sweden, Turkey, and other countries prohibited the exportation of grain, and the clamor about a famine carried bread stuffs up in the United States enormously,

very little of ours went forth; nevertheless, Lord Stanley tells us that there was then in bond in England, 1,106,000 quarters, being 207,000 quarters more than was ever known to be in bond at that season of the year before. It was held, then, as has been remarked, awaiting a contingency that did not happen. It was also held in our own country, awaiting the same contingency, until the bubble burst, and overwhelmed many in ruin.

Lord Stanley, in an able speech delivered in the House of Lords, May 25, 1846, asserted that in the event of the repeal of the corn laws, 40*s.* per quarter was the maximum price which could ever be expected to be realized, which is $1.20 per bushel, being 28 cents per bushel less than the average cost of American wheat in England, exclusive of the duty, for many years. He read a letter from a gentleman, described as being at the head of one of the oldest firms in Liverpool engaged in the corn trade. The writer asserted that he then held in bond two cargoes of fair red wheat, imported last year from a port on the Danube. It cost him 14*s.* per quarter free on board, the freight to Liverpool being 9*s.* 6*d.* per quarter. This would be 70½ cents per bushel in England.

Lord Ashburton, in a speech delivered January 12, 1846, alluding to grain, says: "but the supply must not be expected from America; and we could have no better proof of this than the fact, that, at this moment American grain could come through Canada, at a duty of *four shillings;* and yet, if the returns were examined, it would be found that *nine-tenths of the foreign grain in England was from the Baltic, though the duty on grain from its shores was* FIFTEEN SHILLINGS a quarter. This was entirely owing to the low price of labor in the north of Europe."

Mr. McGregor, the celebrated statist, and Secretary of the British Board of Trade, tells us that the surplus bread stuffs in the Russian empire in one year, amounted to 224 millions of bushels. We know that the greater part of the whole crop of Russia is produced by her serfs, under the most slovenly culture imaginable. The capacity of continental Europe for production is unknown; labor in abundance to be had for a bare and miserable subsistence; and when the product is stimulated by an open market in England, with cost and charges for transportation trifling, compared with those from these shores, will any sane man for a moment suppose that we can compete for that market with any prospect of success?

I am aware that Indian corn enters largely into the calculations of some men; and it may be in some demand for a season, in consequence of the partial destruction of the potato crop both in Europe and America. Indian corn is not to be transported from Indiana, Illinois, Ohio or Michigan, to Europe, without great risk of sustaining injury; and this may account in part for the prejudice which is entertained against it as an article of food. If I am correctly informed, it is more liable to heat than other grain, imbibes a musty flavor, and its sweetness is gone. If this be to a great extent, cattle will not eat it, much less man. It may be doubted whether the peasantry of England, to any great extent, ever tasted Indian corn in its purity; then, too, it requires costly additions to make it a favorite. But suppose it be introduced as an article of general consumption; a large portion of the continent is as capable of producing Indian corn, as Indiana or Ohio. In four years, from 1837 to 1840 inclusive, 5,537,896 bushels of Indian corn, the produce of the country, was shipped from Galatz and Ibruila, two ports at the mouth of the Danube, at an average cost of twenty-four cents per bushel free on board. So says McGregor. It is folly in the extreme, to expect that any important benefit will be realized by the grain producers of the United States, in consequence of the repeal of the British corn laws. Drive the mechanics and manufacturers, or any considerable portion of them, into agriculture, and you will vastly increase the quantity produced, whilst the marketable or money value of it will be diminished.

The American Institute has labored for years to bring into successful operation a new branch of industry—the culture and manufacture of silk—for which our country is admirably adapted, possessing advantages over every other, in point of climate, for this purpose. It is an admitted fact, that we can beat the world, in strength of fibre and lustre. Under the tariff of 1842, we felt confident that the time was not far distant, when the domestic production of silk would arrest the annual expenditure of seven or eight millions of dollars in foreign lands, which might be retained at home, to reward the labor of the agriculturist and the skill of the artisan. But the tariff of 1846 strikes at the production of silk. A large portion of the annual crop of the United States, in the form of tram, organzine and floss, was used in the manufacture of cord, gimp, fringes, &c., and the consumption rapidly increasing. By letting in the foreign article at a low rate of duty, the American silk is to be measureably abandoned. Thus our legislation, in regard to silk, materially injures that branch of it which belongs to agriculture.

Cocoons will be diminished in value, we are told, 15 per cent., and were it not for the bounty paid by Massachusetts, New-York and Louisiana, it might be totally abandoned. And why, let us ask, are the enterprising citizens of this republic, who have been induced to embark in the culture of silk, to be compelled to lay aside their materials, plough up their fields, and *pocket their losses?* Is it because it can be produced at the North as well as at the South ? or is it because the claims of the foreign importers in New-York, who constitute 90 per cent. of all engaged in the trade in that city, have been preferred? Must the monopoly be continued in their hands, at a cost to the nation of seven or eight millions per annum? The acts of your legislators affirm it to be so. Whilst you have the privilege of cultivating potatoes, amid the ravages which assail that inestimable root, and ascertaining the cause of its disease, for the benefit of your transatlantic brethren, the cultivation and manufacture of silk is perhaps deemed too delicate for your habits.

There are other branches of industry which might be introduced into our country, attended with an immense saving of wealth, diversifying the employment of our citizens, and contributing largely to sustain and augment our internal commerce, which stretches now along twenty thousand miles of navigable water; but they must be deferred until wiser counsels prevail. Foreign commerce, which is almost entirely in the hands of foreigners and aliens, is made an especial object of legislation, under the delusive nonsense of free trade, whilst appropriations, designed to facilitate the internal commerce of the country, which is entirely in the hands of our own citizens, meets with an executive veto!

It is not our intention to speak in terms of reproach of the foreigners and aliens who embrace the advantages which our legislation enables them to enjoy. On the contrary, we commend them for their enterprise. We design merely to state the facts, for the information of our own people; being free to admit, that if France or England held out the same inducements to us, we should not fail to embrace them.

Many of you have stopped, on the entrance to this saloon, to examine the railroad iron from the iron works of Peter Cooper, Esq., of Trenton, New-Jersey. This is the first specimen of the article which has made its appearance at these fairs, and we welcome it with joy. We proclaim, from authority not to be disputed, that we can now produce railroad iron at $72.50 per ton, in quality 10 to 20 per cent. better than any which has ever been imported. The present

duty, 30 per cent., is decidedly below a revenue duty; were it $20 per ton, which is nothing beyond a fair revenue duty, and that continued for five years, we should be able to bid defiance to the world in competition. Mr. Cooper, we are told, is now ready to produce 10,000 tons per annum; others would soon be in the field; the ingenuity and skill of our citizens would cause their own iron mountains to flow and congeal in small unbroken streams, from point to point, from town to town, from capital to capital, from the Atlantic to the Pacific oceans, to accommodate their intercourse with each other, and add a giant's strength to our Union in every foot of their progress.

We have here before us a specimen of bituminous coal, from Tioga county, Pennsylvania. The position of this coal is such, that the cost of mining will not exceed $1 per ton. From the mine, it is carried forty miles on railroad to Corning, thence through the Chemung canal and Seneca lake to Geneva, thence to New-York, through the Erie canal, via. Albany. The whole cost of mining and transportation to New-York is, at present, $4.76 per ton, although it passes through a distance of 340 miles. When the Erie railroad is completed, the distance will be shortened 120 miles. The agent informs me that he furnished the Great Western steamer with a quantity of this coal, and that it was pronounced decidedly the best ever tried on this side the Atlantic, although the specimens were from the "outcrop." The quality will be vastly improved as the mine is worked. Strike down the mechanical and manufacturing industry of the country, and such treasures as this will remain as useless as when the fields were roamed by savages alone.

We are proud to point you to the representatives which Georgia has sent to this grand jubilee of the arts and industry of the country. There are specimens of Georgia plains and woolens, with striped cotton osnabergs manufactured in Augusta by George Schley, Esq. This factory turns out 200,000 yards of the former, and 100,000 yards of the latter per annum. They have been pronounced vastly superior to any of the same fabric which has heretofore come to this market. To them we say, in the sincerity of our heart—God speed. We regret that these articles came in too late for competition, according to the rules of the fair. They are, nevertheless, entitled to the highest commendation.

There is another specimen from Greensborough, Georgia. It is cotton yarn, manufactured by Messrs. Curtwright & Co., and has

been pronounced by our judges the best specimen of coarse yarn exhibited. With all these facts and evidences before us, can any one doubt that protection is the true policy of our country? In my judgment, there is not a greater certainty of the elapse of time, than there is that the people of the south, west, east and north, will before long demand protection, in language not to be misunderstood or disregarded.

Let me invite your attention to these beautiful skeins of silk, which were reeled at the New-York filature, in this city. This is the only filature established in the country, exclusively devoted to the reeling of silk. The worthy proprietor, Mr. Van Epps, has here opened a permanent market for cocoons, with a view of removing one of the greatest obstacles with which the silk business has had to contend, viz., the absence of a fixed market. And after the expenditure of years of labor, with the investment of his funds in the enterprise, would it not be a melancholy sight to see such a man smitten by the hand from which he had a right to expect protection?

I cannot omit, in passing, to call your attention to the admirable metallic boat, the invention of Mr. Joseph Francis. The boat in exhibition is 33 feet long, made of four sheets of hard rolled copper. and pressed into form in seventy minutes, by a hydraulic pressure, equal to 2,000,000 of pounds, by which the whole boat is modeled, timbered and planked at the same time. The air chambers render her an admirable life-boat, capable of sustaining immense weight, though filled with water. It is lighter than a wooden boat; no seams that can open in a hot climate; worms cannot penetrate her bottom; as Mr. Francis expresses it, they will find her more than a match for their teeth. These boats are manufactured by Messrs. Stillman, Allen & Co., Novelty Works, New-York, and we heartily commend them to the notice of nautical men in particular.

There is a case of pocket cutlery, made by John Wild, a youth of this city, 15 years of age. These specimens are highly creditable to his ingenuity and industry; our judges pronounce them equal to the best imported.

Let me show you a case of cameos, wrought by Horatio L. Tryon, 36 Suffolk-street, New-York; the execution is pronounced beautiful, and those who feel a pride in these ornaments may add to its gratification the pleasure of exhibiting the native skill of one of their own countrymen.

There is scarcely a requisite that our own skill and industry cannot produce. Let me call your attention to the machine which enables the blind to write. This is pronounced a master-piece of human ingenuity, creditable in the highest degree to the inventor. I must confess that I beheld the operation of this machine with a degree of reverence, arising, perhaps, from a thought at the moment, that it might be one of the nearest approximations of which man is capable to that power,

> "Who, from thick films can purge the visual ray,
> And on the sightless eye-ball pour the day."

There are many things deserving of especial praise. The excellent linen thread, spun by machinery, from Waterford, New-York; the coach lamps from Newark; the beautiful and perfect specimens of leather, from J. & R. Ward, of Newark, and various other contributors; the jack-screws of Ballard; the grates of Jackson; the soaps of Roussel; the copper minerals from Lake Superior and New-Jersey; the school furniture of Mott; the rich display of cloths from Northampton, Massachusetts, from Connecticut, New-York, and New-Jersey. Cottons from Newburyport, Massachusetts, Whitestown and Troy, New-York, Providence and Pawtucket, Rhode-Island, and the horticultural and floral productions from a host of friends, with thousands on thousands of other specimens by which we are surrounded; all testifying to the industry, skill and enterprise of the freemen of this land, and uniting with us in one grand chorus of praise to God that our lot has been cast in pleasant places.

COMMUNICATIONS

Made to the American Institute, in relation to Agriculture and its Products.

On the Culture of Grapes and Manufacture of Domestic Wine.

By H. Longworth, Cincinnati.

I have selected for the cultivation of the grape for wine, hills on the Ohio river, or within a few miles of the river, planting the vines on the tops and the sides of the hills, without particular regard to the exposure. The tops and sides of our steepest hills are rich, and little or no stone near the surface. The north sides of our hills are the richest, and as our seasons are long and warm, I consider the north sides equally favorable to the cultivation of the grape, as the other points of the compass. Where the sides of the hills are so steep as to occasion washing of the soil, I trench the ground from 18 inches to two feet deep, and lay it off in benches, usually sodding the benches, but where in trenching, stones are thrown up I give them the preference. The cost of benching is about $50 per acre, done in the best manner. The depth to which I trench, depends on the depth of the soil. The substratum is usually clay, and I trench deep enough to bring from four to six inches of the poor soil on the surface, wishing to keep the roots that far below the surface. When I first commenced my vineyards, to meet the views of my tenants, who must do it as they were accustomed to do it in Germany, the ground was trenched three feet deep, even where the good soil was less than a foot in depth, and the stiff clay thrown on the top. The consequence was, the vines did not flourish, for the roots are generally inclined to keep near the surface, and never reached to the good soil, two feet below the surface. Where the ground is not so steep as to wash, deep plowing is all I deem necessary.

On the benches on the side hills, I usually place the rows from four to four and a half feet apart. I leave a distance of three and a half or four feet between the plants, and tie them to the stakes, generally of locust, from five to six feet high. On the benches we never use the plow. On level ground, I should plant the rows five or six feet apart, and leave four and a half feet between the plants. Our soil in general, requires little or no manure. We use occasionally, all kinds of manure, but always have it well rotted before we apply it.

In planting cuttings, I plant two in each hill, placing them within two or three inches of each other at the top, and widely separated at the bottom, to enable me to remove one of them without disturbing the roots of the other, should both grow. If the growth has not been sufficient to produce well ripened wood, I cover it with earth the first winter. Early in the spring I head down the plant to two or three eyes, as soon as I discover which is the strongest shoot, break the others off, and permit one only to grow. I break off three or four of the first lateral branches, and after that give the plants no attention till the spring following when I again head them down to four eyes, and permit two of the strongest to grow, taking off the lateral branches to such point as I expect to prune to the next spring. The spring following, (the third year,) I expect a small crop of fruit, and prune the strongest branch from two to four feet long, according to the growth of the plant, for bearing, and prune the other shoot, leaving five eyes, three of the strongest of which I allow to grow, breaking off lateral shoots as usual, and the following spring cut out the bearing wood of the preceding season, always pursuing the cane pruning, and leaving none of the two year old wood; and thereby always having all my shoots within a foot or eighteen inches of the ground. In breaking off the lateral shoots, it must not be done till the wood begins to ripen; for if done too soon, it forces out the fruit buds of the next season, which brings a crop that is usually killed by the frost of the next fall, before fully ripe. I have frequently had the tops of my vines broken off by a heavy wind, and numerous fruit buds of the next season forced out; and when the fall was favorable, which is often the case on the Ohio, had a fine show of grapes fully ripe the last of October.

As a matter of curiosity, I have on the same vine, had fruit not only of the current year, but from the buds of four succeeding years. Say in May, 1847, as soon as the plant is in blossom, I cut off the extremity of the shoot, and force out the fruit bud, designed for fruit in 1848. As soon as the fruit bud of 1848 is in blossom, I again cut off its extremity, and force out the bud designed for fruit in 1849, and so continue to clip the extremities, till the growing season is over. In a grape house properly heated, the fruit of the different years may all be brought to maturity. My Germans are averse to pruning till spring, as such was the practice in Germany. This often interferes with spring work. I would recommend pruning in the fall, as soon as the leaves have fallen, and at the same time plant out cuttings. Where planted in the fall, I should plant so as to leave the upper bud even with the surface, and throw a little soil

over it, and remove in the spring, as soon as the severe frost is over.

We gather our grapes as soon as they are fully ripe. In many parts of Europe they are suffered to hang on the vines till past maturity. This adds to the saccharine principle, but I find it injurious to the aroma and flavor of the wine. I cultivate none but red or black grapes. If red wine be the object, we mash the grapes, and have a partial fermentation before pressing, to bring out the coloring matter, which is contained in the skin. If a light colored wine be the object, we mash the grapes, and press them out as soon as gathered. We carefully pick from the bunches all rotten and green fruit. As soon as the must is in the cask I move it to the wine room, which is sometimes in the cellar, and at other times above ground. In neither case has it ever run into the acetous fermentation

We formerly added sugar to all our must before fermentation. To the Schuylkill Muscadel, from 12 to 16 oz.; to the Catawba, from 6 to 10 oz. to the gallon; being governed by the quantity of saccharine matter in the must, and also the quantity of leaven. Of late years, if the grapes are ripe, we use no sugar to the Catawba grape, and never add spirit in making wine from other grapes. Of the character of Madeira or Port, we generally use sugar before fermentation, and add from five to eight per cent of brandy after the fermentation is over, to make it resemble those wines to which brandy is always added. The Isabella makes a very indifferent wine, unless from 24 to 32 oz. of sugar is added to the gallon of must, according to the maturity of the fruit, when it makes a superior sweet wine, equal to the best imported.

The reports of some of our Horticultural Societies, and publications of some of our vine dressers, speak of 500 gallons of wine to the acre, as an average yield. There is more of poetry than truth in these statements. After 30 years of cultivation, I deem 200 gallons to the acre a full average crop. The most I have known grown on two acres was 1300 gallons from the Catawba grape. This I consider our most valuable grape for wine, and manufactured with care and left till of proper age, will rival the best dry Hock. After two years trial, I am satisfied it will also make a superior sparkling champagne, and am now erecting a vault and building to have it manufactured extensively. From the Isabella grape I one year made from 1-14 of an acre 105 gallons, being at the rate of 1470 gallons to the acre. This grape ripens unequally with us, and is very sub-

ject to the rot. The Missouri bids fair to be valuable as a wine grape; and the Herbemont would be very valuable both for the table and wine if it were less subject to rot. I have tried the foreign grapes extensively for wine at great expense for many years, and have abandoned them as unfit for our climate. In the acclimation of plants I do not believe. The white, sweet water grape is not more hardy with me than it was 30 years since, and does not bear as well. I have tried them in all soils, and with all exposures.

I obtained 5,000 plants from Madeira, 10,000 from France; and one-half of them, consisting of twenty varieties of the most celebrated wine grapes from the mountains of Jura, in the extreme northern part of France, where the vine region ends; I also obtained them from the vicinity of Paris, Bordeaux, and from Germany. I went to the expense of trenching one hundred feet square on a side hill, placing a layer of stone and gravel at the bottom, with a drain to carry off the water, and put in a compost of rich soil and sand three feet deep, and planted on it a great variety of foreign wine grapes. All failed; and not a single plant is left in my vineyards. I would advise the cultivation of native grapes alone, and the raising of new varieties from their seed. It may be advisable to cross the Catawba with some of the best foreign wine grapes, and raise from the seed.

I have 24 vineyards, and about 67 acres of vineyard in bearing, and about 32 acres recently planted, or ready for planting in the spring. Last year there was a partial failure of the crop, but we made 300 barrels of wine, being 200 barrels less than we calculated on making before the rot commenced in the grapes. Of the cost and profit of cultivation, I am not fully competent to speak; for profit has not been my object, nor have I devoted that attention to my tenants, that a regard for profit would require. I commenced with the firm belief that the climate and soil in this region was admirably calculated for the cultivation of the grape, and manufacture of wine, and though I had little hope of succeeding in the cultivation of the foreign wine grapes, I determined to give them a fair trial, and resolved to collect native grapes from different parts of America, believing as the Hughes crab apple of Virginia, gave us better cider than any foreign apple, I might find a native grape capable of making a superior wine.

About 25 years since, I commenced settling Germans on my hilly ground, and setting off to each from 12 to 25 acres. They were generally very poor. There were no written contracts, but the under-

standing was, I was to furnish all grape cuttings and fruit trees wanted. I paid for trenching and benching portions of the ground, and gave them such aid as was necessary at the outset. I was to have half the wine at the press, and half the amount of sales of the other fruit. All other articles raised on the place were for their own benefit. The grapes were generally neglected, as it took some years to bring them into bearing, whilst the potatoes and sourcrout yielded an immediate income. My first tenant instead of having a crop of grapes the third or fourth year, had his crop the ninth year, when his share yielded him $200. The tenth year, his wine yielded him about $800. So large a sum, and all in silver bewildered the old man's imagination. He made me his best bow, went into the interior, bought land, and began a vineyard on his own account. His latitude was too far north for the grape, and after six years absence the old man returned nearly pennyless, and began a new vineyard on four acres of ground, adjoining the old one, then and now under charge of one of his sons-in-law. He will next season make some wine; but to cheer the old man's spirits, we have enabled him occasionally to take his accustomed glass of wine, and sing his old song under the shade of his favorite tree.

Most of my tenants have occupied their present vineyards from 10 to 25 years, and are contented and happy, if not rich. One of them who works harder than any of the others, and keeps his family at work, and devotes most of his time to his vineyard, made from his wine last year, $1,400. But I would not recommend the cultivation of the grape for profit to persons who hire all and work none.

Our wines have always met a ready sale in the city, and bring from $1 to $1.50 per gallon. The grape culture is now spreading rapidly, and we must look out for a market abroad. The price will depend on the manufacturer. In the wine countries of Europe it is a standing proverb that, "a poor man cannot make good wine." The reason is obvious. He is compelled to sell his wine when new, and cannot devote the necessary attention, and wait till his wine is five or six years of age, before he sells it.

It is there also said, that all depends on soil, and exposure; and whilst the wine at one vineyard brings $12 per dozen, the wine of an adjoining vineyard will not command one quarter the sum. In this doctrine I place no reliance. With us, I find the quality chiefly depends on the care and attention of the manufacture. Wine requires much greater skill, and care in the manufacture, than is requi-

site in making cheese and butter. What more simple than the making of butter, yet one tenant on a farm will make butter of a superior quality, whilst the butter made by another tenant on the same farm, with equal facilities, is scarcely fit for use, and will not command half the price of his brother tenant. In Europe a landlord often commences with selling his wine at $3 per dozen, and ends by selling it at $12 or more, as his reputation becomes established. A manufacturer who values the reputation of his vineyard, in unfavorable seasons sells his wine in the cask, without attaching his name to it at a low price.

The cultivation of the grape for wine in our country was attempted about 50 years since, by a company at Spring Hill, near Philadelphia. They tried foreign wine grapes, and found them unsuited to our climate. They found one grape only to stand the climate and bear well.

The idea of manufacturing wine from a native grape would in that day have been hooted at, and the manager wisely, if not honestly called it the Cape grape, though taken from the banks of the Schuylkill; leaving it to be inferred that the vine was from the Cape of Good Hope. The next attempt was by the Swiss emigrants, at Vevay, Indiana. They found the grape of Switzerland unsuited to our climate; and hearing of the Cape grape succeeding at Spring Hill procured it, and for many years cultivated it, making a hard rough, red wine, excellent for sangaree, but not relished as a table wine.

Their vineyards have gone down, and the Cape grape (Schuylkill Muscadel) is now but little cultivated. It is one of our surest bearers, and pressed as soon as gathered, and manufactured after the manner of Madeira and Teneriffe wine, when at a proper age it greatly resembles them.

We are indebted to Major Adlam, of the District of Columbia, for the introduction of the Catawba, our best wine grape. He erred in making from it a sweet wine. The Major was compelled to cultivate it with a view to immediate profit, and injured the reputation of his wine, in seasons when the Catawba did not produce a full crop, by mixing with them the wild grapes of the woods in his vicinity. By the introduction of that grape he was a great benefactor to the nation, and the day is not distant when the banks of the Ohio will rival the banks of the Rhine, in the quality and quantity of

the wine produced. Our German emigrants are the people who will accomplish it. Our hills suitable for wine are of little value for other cultivation. Give a German 10 acres of this land, and if he has a wife and children, he will live in great luxury. He will never want for his two greatest of all luxuries, wine and sourcrout. His children however small, not only aid him in the cultivation, but his wife during the summer and fall does the greater part of the labor in the vineyard. The poor vinedressers in Germany are seldom so rich as to own a horse, and therefore over estimate their value. Yet greatly as they value the acquisition of a broken down pony in this country, it does not lessen their estimation of the great value of their wives in the vineyards. A very honest Dutch tenant of mine, who was so unfortunate as to lose his wife, observed to me, "he might just as well have lost his horse."

SOILING.

By R. L. Pell, Pelham Farm, Ulster county.

For the last four years it has been my constant practice to soil, not only cows, but hogs, oxen and horses. My yards are large, enclosed by stone walls, and so arranged as to collect all the manure in the centre. There is a pump and trough convenient to it, and open sheds where the animals may lie and ruminate at pleasure.

Three times each day, at stated hours, green crops are cut and brought to them, such as clover and timothy grass, green oats, green corn stalks, green buckwheat in bloom, root tops, &c. Occasionally, by way of change, dry hay and straw are cut up and given to them, mixed with sufficient wheat bran to induce them to relish it. The stock are never permitted to waste anything; that left by the cows is given to the horses, as horses will eat after cows, and vice versa, cows after horses; but they will not eat after each other. The leavings of the horses is then fed to the hogs. The animals are enabled to consume their quantum in about thirty minutes, when they immediately lie down, rest, take on fat, and secrete milk. If pastured, they require many hours to obtain the requisite food, besides laboring diligently, which has a tendency to prevent the secretions either of fat or milk. They have but little time to ruminate; and when driven to and from pasture, run wildly about the field; are whipped, stoned and chased by dogs, which causes them to become feverish, and as a result contract their milk vessels.

Salt should always be within reach of the animals in the yard, as it is indispensable to keep the organs of digestion active, increase the milk and growth of fat, besides much improving the quality of the flesh.

I have found, by actual experiment, that cows, when fed in the yard at regular periods, with a change of food, not allowing them

at any time to be over fed, and supplied at all times with an abundance of water, have doubled their milk; that is to say, the same cows that were one year depastured gave, when confined, twice the quantity of milk, and of a much richer quality. When depastured, I did not obtain a particle of manure; it was dropped upon the soil, certainly, but with very little advantage to it, nearly all the volatile gases were immediately given to the atmosphere, and many of its other valuable properties were withdrawn from it by flies; so that the soil received but little benefit. One of the principal and most valuable ingredients in manure is ammonia, which is converted to a volatile substance in farm-yard manure, called nitrogen, and is, of all others, the fertilizer, that must, if possible, be saved, as neither seeds nor plants can be obtained without it. The manure dropped in the fields is deprived immediately of this indispensable gas. The potash and soda also being easily dissolved by water, and likewise lost, practically lost, by being deposited in excess. In the barn-yard these valuable substances may be preserved by means of charcoal dust, which absorbs the ammonia as it rises to escape, and the potash as it dissolves, by absorption, and holds them until saturated with rain, when the gases are again disseminated in the heap, and the charcoal takes in moisture. This manure may then be placed on fields in large or small quantities, as required, and in such a manner as to produce the most advantage. An opportunity is afforded, likewise, of making any description of manure needed. If highly nitrogenized substances are required for crops, allow the hogs to run in the barn-yard; and feed them corn; it contains valuable nutricious elements, suitable not only to the growth of plants, but the animals themselves, being composed of nitrogen, potash, carbon, soda, lime, and other necessary chemicals, all of which, after having formed the bones, flesh, fat, skin, hair and muscles of the animal, are again returned to the manure heap in lesser quantities. The value of the manure may be farther increased by feeding oats, rye, peas, buckwheat, cut straw, &c.

One reason that the excrement of the horse is so much richer and more valuable than that of the cow is, that the horse is fed on farinaceous matter, corn, oats, &c., which the cow is not; and so likewise is that of man, because he partakes of a great variety of food, both animal and vegetable. My barn-yard has yielded me a large amount of manure per annum, since I commenced soiling my stock; whereas, before, I did not obtain a single load, except in winter. The plan I adopt is, to cast daily all the refuse of the farm into the yard; such as weeds, muck, leaves, refuse straw, sods from the

hedge rows, pond mud, refuse vegetables, and numerous other substances that might be named. The hogs turn them over and incorporate them one with another, and the stock trample down and form them into a solid mass; charcoal dust is once a week spread over the whole, which retains and preserves all the gases that would otherwise escape; every three months it is drawn out, placed in a square heap and mixed with plaster, ashes, salt, muck, and guano; the whole is then covered with charcoal dust to the depth of six inches, and left until fall, when it is used upon the fields most requiring it; spread on broad cast, and plowed under the earth, and the crops make use of the gases as nature provides, and all care ceases.

Another most important advantage accrues to the soiler, viz: a piece of land that would support five cows, depastured one week, would amply furnish the same with an abundant supply of food one month, if cut and carried to them. The piece depastured would likewise be almost destroyed by poaching in wet weather; trampling, sleeping upon, and injuring the herbage by close eating. Horses do much more damage than cows, as they eat much closer, and frequently pull the grass out by the roots.

When cattle are stall-fed, or soiled in the yard, the nitrogen of the manure may be preserved by artificial means. It is an ingredient absolutely indispensable to the growth of plants. By analysis it has been found in every part of the growing plant; the roots, stems leaves, &c., contain it, showing that without it plants cannot be grown. How important then it is, that so valuable a substance should be preserved. I have grown plants in pure charcoal dust, by watering them with rain water; the rain water yielded them ammonia, and consequently nitrogen as one of its elements. I found with spring water, I could not grow them after a certain period at all in charcoal dust; but with rain water most successfully. Although the air must contain a vast quantity of nitrogen, I am confident the plants I grew, did not obtain the quantity they required from that source; if they had, the spring water would have answered them as well as the rain water; they must have obtained it through the medium of ammonia, contained in the rain water. This is a singular fact, and goes to show that although a generation of more than one thousand millions of the children of Adam, and 20,000 millions of animals cease to exist, and the nitrogen which they contain, is yielded in part to the heaven every thirty years, still plants cannot elaborate it in their system, except through the medium of the roots.

The hydrogen unites with the nitrogen, produced, not only by dead animals, but the excrement and urine of all animals while living, as well as other putrescent matter; thus forming ammonia, which combines with carbonic acid gas, and descends with every shower to the earth's surface, in a soluble form, easily taken up by the roots, and distributed throughout the field. Davy calculates, that a pint of rain water contains only a quarter of a grain of ammonia, that a field of forty thousand square feet, must receive yearly, upwards of eighty pounds of ammonia, or sixty-five pounds of nitrogen; for it is ascertained that the annual fall of rain water in England, on this extent of surface, is at least 2,500,000 pounds. This is much more nitrogen than is contained in the form of vegetable albumen and gluten in 2,800 lbs. of hay, or 20,000 lbs. of beet root, which would be the yearly produce of such a field; but it is less than the straw, roots, and grain of corn, which might grow on the same surface, would contain; therefore, the farmer must supply the deficiency of nitrogen by using manures containing ammonia.

Animal manure is chiefly valuable for the ammonia which it produces. Without it, fodder for animals, or vegetables and grain for man, cannot be grown. Manure without stint with nitrogenized substances, and the wheat grown will yield 18 per cent of gluten, will weigh 64 lbs. and produce 50 bushels to the acre. Such has been the experiment I tried upon a wheat field, when the adjoining field, treated in the usual manner, yielded me wheat weighing 56 pounds, and 15 bushels to the acre, and probably not more than five per cent of gluten. I placed some of the same nitrogenized composition upon a barren piece of sandy land, which I had never seen covered with verdure of any description, and in a very short period of time, it was clothed with a dense dark green grass, which tillered well. White clover afterwards came in, which, when it dies, will afford food for a succession of plants ; and the piece may be considered as reclaimed.

All lands require humus or decayed vegetable matter. When soiling cattle is practiced, an opportunity is offered of supplying the farm with whatever it may require. If, upon examination, humus is discovered to a great degree deficient, cart decayed oak wood, and mix it with your compost heap. Each pound brought in, will absorb from the atmosphere more than 70 times its volume of gaseous ammonia; consequently the quantity of nitrogen will be large. Charcoal possesses the same valuable property in a greater degree. Chemists inform us, that it will absorb 90 times its volume of ammo-

niacal gas. Twice a week a thin coat of charcoal should be spread over every barn-yard and compost heap. Muck will, to a certain extent, answer the same purpose. "Lord Egremont, of Sussex, England, used to have his cows tied up during the greater part of "the year; he maintained that one-third of the food was saved, "that his cows were fed with one-fourth part of the usual trouble, "that more dung was made, and that there was no spoiling the "ground. He stated that little more than half an acre may be made "to produce grass sufficient, when cut and brought into the stable, to "keep a cow nearly a whole year [in England.]

Cows and oxen, as ordinarily treated, are much hardier than horses, and not half as liable to disease. They will endure without apparent suffering, extreme cold in winter, and intense heat in summer; they will bear confinement in stables, without much apparent detriment to their health, for 18 months. I saw a milch cow in Geneva, Switzerland, which had been confined to a stable for two years; her owner informed me that during that period, she had not been out more than ten times, and then only for an hour or so. She had never been sick, and was a great milker. When I saw her, she appeared to enjoy good health; her toes had grown very long. I found, upon inquiry, that the persons who made milk-selling their business, living in the vicinity of towns, not only in Switzerland, but Germany and England, were accustomed to keep their cows in confinement the year round, without injury to their health. I imagine the same thing is practiced in the outskirts of the city of New-York.

It would not be possible to keep the horse in the same manner, without exercise, and he retain his health, plainly showing that the cow is much hardier in this respect. Still, I much prefer that cattle should have a large yard to exercise in, and enjoy the air.

My cows, during winter, have each a separate stall, in which they are fastened every night. In the morning, they are curried, brushed and fed, after which they are turned in the yard, and left there during the day. The only people in Europe who generally keep their cow houses cleanly, are the Hollanders. Their cow houses are so neat, that a person not over nice, might dine in them without much offending his olfactory nerves; they are universally airy, remarkably well ventilated, and perfectly protected from too great a glare of light, which is found to disturb cattle when ruminating, and to encourage the annoying little fly.

In England, such is not the case among the same class of farmers. Their cow houses are badly constructed, exceedingly dark, and not sufficiently ventilated. In our country, the same class have no cow houses at all. Their cattle generally do not know any other luxury, than to be allowed to stand on the south side of the barn during four months in the year. Before their stable doors may be seen large piles of horse manure, scarcely allowing space for egress or ingress; the centre of which, if opened, will be found burned to a dry white powder, and is termed fire fanged. I could name four farmers, living in one of our most celebrated agricultural counties, who have absolutely moved their barns from their manure heaps, instead of their manure heaps from their barns. Two of these gentlemen have long talked of removing west, on account of the sterility of the soil.

Let stock be soiled, and the value of their manure is in proportion to their feed. He who feeds oil cake, wheat bran, clover, and lucerne grass, will obtain a manure exceedingly rich, and worth precisely double that derived from animals fed upon straw and chaff. In the former case, his animals will yield a large quantity of milk; it will be rich, and afford cream capable of making the best butter, or the milk itself will make the richest cheese. In the fall of the year the cows will be fat, and fit for the butcher. In the latter case, his manure is comparatively worthless; he obtains a small quantity of their milk, incapable of producing either much or rich butter or cheese, and his animals are mere shadows. The only question as to rich food for cows will be, can it be more advantageously? and this will depend upon the use to be made of the produce, upon situation, markets, and circumstances.

As no plant can use other than liquid manure in its growth, farmers should be particularly careful of the liquids of their barn-yards. Every barn-yard should have the requisite cisterns or pit holes, into which all the manure made should be thrown daily. When full, let it remain one month to become soluble, after which apply it to your land and plow it under. If left on the surface, exposed to the drying influences of wind, or the scorching sun, great waste necessarily ensues.

Although I would advise farmers to soil their stock, still I would not keep a single animal expressly for its manure, as hundreds do in England. The manure should be a clear profit, and it can only be so, by making the horses and oxen perform sufficient labor to pay for their food, and the money expended upon them. When cattle are

fattened, their manure, by being enriched by the corn, &c., fed, should likewise be a clear gain. The fodder and trouble must be repaid by the increased value of the beast. If the value of the food used for stock is found to be balanced by the labor and use of the stock, the manure may then be considered clear gain.

The value of manures differ, on different soils, so that if 100 farmers were to reckon the value of manures used by them on different soils, all using the same kind, very possibly no two of them would agree.

When pigs are soiled, their manure should always be mixed with that of the stable or barn-yard, before used, for the reason that it contains a large percentage of nitrogenized substances, especially when they are fed corn and other cereal grains. If allowed to putrify in the pens, it becomes excessively offensive, and if in that state it is applied to esculent roots, it would give them an unpleasant flavor. If properly managed, it is a most powerful manure. A gentleman formerly residing on Long Island (Mr. Samuel Stevens, deceased,) once informed me that he had applied pure hog manure to a field of wheat. The grain grew most rapidly, presented a beautiful green appearance, and was admired by all who saw it. When it reached the usual heighth of wheat, it was still green, and showed no inclination to form the tassel. It did not cease to grow until it was one-third higher than any wheat grown on his farm before; at that stage the straw ripened, but hardly yielded a single kernel of grain.

The excrement not only of the hog, but all animals, differ very materially in value for agricultural purposes. Of the dung of horned animals, I would prefer that made by the ox, to that of young stock, for the reason that the latter require all the phosphate of lime yielded them by their food for the formation of their bones, and cows convert the most of their phosphates into milk. The ox requiring but a very small quantity, and none to make fat, enriches his excrement with that invaluable substance. If Mr. Stevens had mixed his hog manure with that of the ox, containing phosphate of lime or bone earth, and applied it in less quantities, his wheat would have produced him a large quantity of grain.

Plants and animals require the same ingredients to induce growth and bring them to maturity. Professor Leibig says, "that caseine, "albumen and fibrine, which have hitherto been considered the pro-

" duction of animal life, are now ascertained to be previously form-
" ed by plants, as well as starch and sugar, and are all assimilated
" and modified by the animal functions. The three first substances
" have been by the chemist extracted from plants, and their analysis
" is precisely similar to those yielded by animals."

I have heard farmers object to soiling, for the reason that they imagined frequent cutting of meadows had a tendency to exhaust the soil, and would injure it more than depasturing. I have found, by actual experiment, that such is not the fact. You may mow a field ten times during the summer, and the injury will not be as great as it would to cut one crop of hay, to say nothing about the manifest destruction of roots, by poaching, &c. You injure grass but little by constant mowing, provided you do not permit it to go to stalks and seed. It is the formation of stalks and seed that exhausts the humus, and other valuable ingredients in the soil. If you remove the grass before the seed is developed, but little injury will accrue to the land. It is necessary that the agriculturist should draw upon his lands sufficient manure to keep the humus to his soil always the same. If he does this, his land will yield him a crop of grass annually for a term of years.

Should meadows be so located as to allow them to be overflowed, it will be unnecessary ever to manure them, as they will appropriate to themselves from the slime contained in the water, the requisite enriching properties to grow grass crops continually. Without irrigation in the southern parts of Italy and France, fine crops of grass cannot be raised. In the neighborhood of Avignon in France, they find it necessary to irrigate even their potatoe fields. The inhabitants of Tuscany irrigate all their crops, wheat, beans, &c. The inhabitants of this country never irrigate, whatever their facilities may be.

I think farmers err in laying *too great* a stress upon the necessity of importing foreign stock *for dairy purposes*. It has no doubt been found by many importers, who have experimented fairly, that our *improved* native cow gives as much milk the year round, yields as much cheese and butter, stands the climate better, and is kept at as little expense, as any of the imported cows in the same condition. At all events, if such has not been the experience of others, it has been mine. The apparent supposition upon which importers act, is, that they suppose an extra high priced imported animal, must necessarily produce a superior stock, when it not unfrequently happens that those very animals, by judicious selection, have but two good

points. Their imperfections are disseminated through a whole neighborhood, merely because they cost an exorbitant sum, and enjoy the reputation of having crossed the Atlantic. This, of course, does not always happen. Probably some of the finest animals, of the Devonshire, Hereford, and short horn breeds, that have ever graced the shores of Britain, have been brought to this country, and we have most assuredly improved the form and beauty of our animals by frequent crossing. Still an approach to the same result would have been obtained, if our farmers had paid the same attention to our native stock that they do to the foreign. The usual practice is, and I fear always will be, to sell the best to the butcher, for the reason that it bears the highest price, and breed from the inferior. Such policy will inevitably deteriorate stock, and disgrace our farmers, though they may own the finest improved animals. I approve highly of the Short Horn cross, for animals intended for beef, but as far as my experience goes, not for milk, except perhaps in a slight degree. I have owned a Short Horned cow which yielded me 30 quarts of milk per day, and a native which gave only 20 quarts Still the native cows milk was certainly one-half richer than the Short Horns, and consequently worth twice as much. All things considered, I think the most admirable animals for the climate of America, are the animals raised in America.

Feed animals well; never stint them when young. If you do, be assured that they will never afterwards take on flesh, and grow so rapidly or so fully, no matter how well fed at an advanced age. Of course, a serious loss will accrue. The farmer who spends the most money in food for his animals, will realize the greatest profit, provided he makes a judicious selection of stock and his markets are favorable.

A breeder of cattle can always choose from his herd, without a possibility of error, such animals as will fatten advantageously. His guide is symmetry in form, a wide-spreading carcass, small bones, compact body, very deep quarters, thin skin, full dilating eyes, fine brisket, small head, mild countenance, thin muzzle, distended nostrils, wide shoulders, wide back, round body, short legs some distance apart, full flanks, and a fatty excrescence under the roots of the tongue. When the breeder has selected such an animal, he is confident that any amount of food he may eat, will amply repay him in prime flesh. Judges of animals depend mainly upon handling or touching, as they term it.

Soiling the Horse.

Hitherto I have confined myself to milch cows. I propose now to treat of soiling as applied to horses. It may be thought that I lay too great stress on the importance of soiling; but I think the day is not far distant, when all will soil animals, if not from choice, from necessity, as the value of land is daily increasing in the vicinity of our cities, and it will soon be found that agricultural pursuits will not afford remunerating profits to the farmer, who fences 100 acres in 10 acre fields, for the purpose of keeping 10 milch cows, when 15 acres, properly tilled, will keep the same in much finer condition.

Equus, the horse, according to naturalists, consists of several different animals, as the Equus Caballus, Equus Asinus, Equus Zebra, &c. Of these species the horse is the most valuable, docile, largest, and most extensively distributed over the universe; he is but one of the very few which existed in the tertiary periods of geology, that has been preserved to the present day. The first herd of horses from which our stock has been derived, proceeded originally from Mount Ararat into Asia and Africa. In Mesopotamia on the river Euphrates, and in the deserts of Syria there are tribes very rich in fine horses, and the reason is that they have fertile plains and valleys, abounding in green grass and luxuriant herbage, upon which the horse can feed almost the whole year, inducing rapid growth and corresponding vigor of constitution; and besides, these people take unbounded care of their animals. Among the Bedouins, when a colt is foaled, it is never permitted to be dropped upon the ground, as is the practice of our people, but is held in their arms for hours, washed, hugged and treated as if it were a child.

No horses were found on the continent of America when first discovered; two mares and a stud were brought here by the Spaniards, and from them have descended the countless multitudes that now run wild over the immense plains and pampas of South America; clearly proving by their immense increase, that a southern climate abounding with rich grasses, is particularly congenial to them. The character of a horse is entirely changed by food and climate; although he enjoys the burning region of a southern clime, still he cannot endure the other extreme. In Iceland we all know he dwindles from a magnificent animal to a miserable long-haired dwarf; in Lapland and Kamschatka, he does not exist even in that deformed shape. The best of the wild Asiatic races are supposed to be those inhabiting Tscherkessie, Abassi, and the slopes of the Caucasian mountains;

the chief varieties, as mentioned by Pallas, among the Asiatic horses, are the "moustachoed horse," characterized by numerous strong bristles on the upper lip; the " woolly horse," a Russian variety, " covered with a crisp woolly hair, and common among the Baschkirs; and a naked or hairless horse, not uncommon among the Krim Tartars, who keep it always clothed," and there is a variety delineated by Johnston, in which " a woolly mane is continued from the neck along the middle of the back to the tail." The 1st record of the application of tamed horses to the use of mankind is in Genesis, in which it is written, that, when Joseph transferred his father's remains from Egypt to Canaan, " there went up with him four chariots and horsemen," which was 1650 years before the birth of our Savior. Horse races formed part of the Olympic games in Greece, 1450 years before Christ. " The first notice we have of a horse being employed in agriculture, is in the tapestry of Bayeux (woven in 1066), where one is depicted drawing a harrow." In 1121 the first Arabian horse was imported into Great Britain, and was presented by Alexander I, of Scotland, to the church of St. Andrews. King John afterwards procured 100 stallions from Flanders. Edward II, and Edward III, imported horses from Lombardy, France, and Spain. Henry VIII first established race-courses, and James I perfected the system, and during his reign a peculiar breed was formed for the purpose; and from Great Britain our best stock has been obtained. The food for the horse is a matter that requires our particular attention, although we find him fed in different countries upon leaves, roots, twigs of trees, flesh, broth, dried fish, eggs, etc., Still these substances cannot be considered his natural food, as the horse is truly a herbivorous animal; among the Tartars horses are frequently eaten, and their flesh is considered a great delicacy.

It is well to recollect that there are but four elements which are considered principally concerned in producing food for animals, and they are nitrogen, hydrogen, oxygen and carbon. Chemists say that "no animal can subsist for any length of time upon food destitute of nitrogen," and that a mixture of different food is absolutely necessary to the well-being of all kinds of stock. And I would impress upon all those who now soil animals, or who may hereafter do so, the absolute and indispensable necessity of an ample supply of water, which, although it is not nutritious in itself, still is all-important as a dissolver of the nutritive matter which is fed to animals, rendering it fit for the absorbents to convey it into the blood. By analysis, it is found, if a horse be fed 1,000 parts of the common bean, he obtains from it 570 parts of soluble nutritive matter, 426

parts of mucilage, or starch, and 103 parts of gluten. If dry peas be fed, he obtains from 1,000 parts, 574 parts of nutritive matter, 501 parts of mucilage, or starch, 22 parts of saccharine matter, or sugar, and 35 parts of gluten. From 1,000 parts of linseed cake, 151 parts of nutritive matter, 123 of starch, 11 of saccharine matter, and 17 of gluten. From 1,000 parts of red beet, 148 parts of nutritive matter, 14 mucilage, or starch, 121 saccharine matter, and 14 of gluten. In 1,000 parts of parsnips, cabbage, Swedish turneps, common turneps, red clover, white clover or lucerne, the quantity of nutritious matter is very far less; but from 1,000 parts of oats, he obtains 743 parts of soluble nutritive matter, 41 of starch or mucilage, 15 of saccharine matter or sugar, and 87 parts of gluten, or albumen, showing that oats, as food, are far more valuable than the root crops. Therefore, my practice has been, to keep my horses according to the labor I have for them to perform. When idle, they are fed upon green corn-stalks, green grass, carrots, potatoes, bran, or fresh, unfermented apple pomace, all of which they will partake of, as a change, with apparent satisfaction. When they are compelled to labor hard, they are fed the best cut hay, and 12 quarts of oats each per day; being taken from the green succulent food, their oats are a great treat to them, and I believe do them infinitely more good than if they had been fed constantly upon them. I have sometimes fed my horses cut straw and boiled potatoes, but found, without oats, they could not, on such food, do a day's work, but constantly, although allowed as much as requisite, fell off in condition; still, Messrs. Vancouver and Author Young, of Essex, England, affirm that horses have been kept throughout the winter entirely on steamed potatoes, to every 300 lbs. of which was added half a pint of salt, and a little sulphur; and that, fed in this manner, they performed with the greatest ease, all the common labor of the farm, without either hay or oats. If such is the case in the mild climate of England, it has not been my good fortune to find that it would succeed in our climate. I have found by frequent experiment, that carrot may be fed very advantageously to working horses, so much so, that a horse will gain rapidly, if fed twice a day with oats, say four quarts at each meal, and an equivalent to six quarts of carrots. The saving in one month, of oats, by this mode of feeding, is considerable. Horses fed on carrots alone, will consume thirty bushels in one week; when so fed, the tops should be cut off and given to cows; they are tender, and very delicate. Cows are extravagantly fond of them, and will eat them in preference to any other food. An acre, well cultivated, will grow 1,000

bushels of carrots, and yield about eight tons of green tops. As the carrot is a root depending mainly upon the soil for nourishment, the tops may be cut with a scythe, and fed, before the roots are dug; they are very hardy, require but little attention, bear neglect for half the winter in the fields unprotected, which admirably suits a slovenly farmer. (They should, however, be dug and stored by the first of November.) Horses fed on carrots, present a beautiful glossy coat. It is a crop almost indispensable to a man who practices soiling. The parsnip, mangel wurtzel, turnep, and potato, are likewise very valuable, but in my estimation, not so much so as the carrot.

In changing the food of my horses from green to dry, and vice versa, I am particularly careful in seeing that it is done by degrees, as on one or two occasions I have noticed that an *immediate* change has produced hoven in cattle, though I have not observed any ill effects in horses. Still, I think it best to break off gradually. If, for instance, you are feeding corn, add green food a short time before you intend to make the change, and increase it constantly while you diminish the corn. Horses, when soiled, should be fed in small quantities and often. An immense advantage gained in soiling horses is, that you have them always at hand when required for labor, and not having enjoyed leisure in the fields, they never show any indisposition to render themselves useful; the time lost in catching them when required, is frequently severely felt by the farmer. I have known half a day consumed in this way, by a hard-working man, and all his farm help. Still, as his grand-father never soiled his horses, he would not, but contented himself by swearing the horse should never go unhoppled again. Hoppling is the result of pasturing. It is a bad practice, and serious to the gait of any animal, besides rendering him incapable of defending himself properly from the flies; the consequence is, he becomes poor in flesh, and a disgrace to his hard-hearted, stubborn master.

If the farmer will not *take my advice*, and soil his horses constantly, for his own advantage, he should do it partially. He should cut grass for them during the day, and turn them into some well clothed meadow at night. Thus they will escape the detestable fly and enjoy some quiet and ease, and be enabled to select grasses more congenial to their tastes than those he had cut for them. In the agricultural report for Essex, in England, it is said that two horses have been supported during four months upon a quarter of an acre of lucerne, with scarcely any thing given to them besides; and

that six horses, at hard work, had been kept on lucerne instead of hay, but with an allowance of oats and cut straw for twelve weeks; six from the first cut, four from the second, and two from the third; which, valuing the hay saved at six shillings per horse per week, would amount to $36. A paper in the communications to the board of agriculture in England, states, that in one year, 23 horses have been kept 20 weeks, and in the next, 28 horses during 18 weeks, upon eleven acres alone, which gives an average of three roods per horse in nineteen weeks. An ordinary sized cart-horse could consume, easily, 100 lbs. of green food of any kind, in one day, and a small allowance of oats, say two quarts. If the same horse were allowed to run over a three acre field, he would probably destroy three hundred pounds of food while obtaining one hundred. I have found that a square rod of ground, covered with a luxuriant crop of grass, is sufficient to last a horse one day, with a small quantity of oats.

The English cavalry allow their horses in barracks 12 pounds of hay and 10 pounds of oats per day, on which, they say, they are kept in high condition. I cannot imagine it possible, as in 1,000 parts of the best grass, there are only 82 parts of soluble nutritive matter, 72 parts of mucilage or starch, 4 parts of saccharine matter, and 6 parts of insoluble matter. If the cavalry horses stood still, I should imagine that quantity of food might be sufficient, as inactive horses require much less food than horses that are employed. The bodies of horses are all the time wasting, and the waste is proportioned to the activity of the animal; therefore the working horse requires nourishment proportional to the waste of his body. A horse soiled will consume as much food as 8 sheep: a cow in milch as much food as 12 sheep: an ox when fattening, as much food as 10 sheep : a calf as much food as 2 sheep.

When you go upon a farm, and find the farmers horses looking plump, well formed, high spirited, and powerful, you are apt to say at once, that horse must have come from prime stock; whereas the credit is entirely due to the farmer, as you may take an animal bred from the best stock in existence, and if allowed by the farmer to suffer deprivation of proper food, he will never become perfectly developed, either in bulk or proportion. He will never be free from disease, and will not have any constitution. The same rule will apply to all kinds of animals, whether man or beast. When, therefore, you find on a man's farm, fine stock, well proportioned, and of the standard size, you must award him the credit, and not the breed. You may take an animal of the most inferior kind, and by judicious

use of nutritive food, make him attain great size; for examples, look at our monstrous hogs, made sometimes to weigh 1,100 pounds; our immense prize oxen, which have reached more than 3,000 pounds, the parents of which are frequently moderate in size. Who will say this degree of perfection was not produced by the farmer.

It is from artificial feeding that our markets are supplied the year round with fine beef, pork, calves and sheep, and the same farmers who now raise these animals in open fields, could, by soiling them, add 20 per cent to their profits, provided the crops they raise for the purpose are supplied, while growing, with proper nutriment, from which they can assimilate organic or inorganic matter. The animal derives his strength, his growth and his bulk from the substance afforded by these crops. From every 1,000 parts of gluten a horse obtaines from his food, he receives 557 parts of carbon, 78 parts of hydrogen, 220 parts of oxygen, and 145 parts of nitrogen. By manuring his crops with highly nitrogenized substances, the farmer adds vastly to the amount of gluten. If his horses be kept fat in winter, their bones and muscles will be defended against cold, and the acids of aliments will be so tempered, as to strengthen and maintain their whole frame. Let it be remembered that the horse is a native of warm climates, and do not, as is usual among farmers in our northern States, turn them out in the barn-yard to obtain a scanty allowance of poor coarse food during the winter. They are liable to numerous diseases which are not unfrequently brought on by such injudicious and cruel management. When once diseased, it is almost impossible to find out what that disease is, as his structure is amazingly complicated. There are but two indications showing internal disorder; the one is an indisposition to work, and the other a refusal to eat. When either of these signs are manifest, you must at once let the animal rest, and search for his disorder, and on no account compel him to labor. Soil your horses, feed them during the winter on a variety of food, such as oats ground and whole, bran, ship stuff, beans, peas, turneps, carrots, potatoes and parsnips, occasionally steamed separately, and together. In summer keep them always confined in airy stables, and feed them clover, rye grass, bruised grains, green corn stalks, cider pomace, oil cake, hay, &c. Be particular to give them three-fourths of a pound of salt per week, occasionally two ounces of sulphur, and frequently two ounces of wood ashes. By good keeping and judicious management, a pair of horses, perfectly sound when young, will last and labor constantly twenty-five years, and to the end will retain their spirits. I have a pair of bay horses on my farm, that are now twenty years old,

during which time they have never been depastured, and have worked daily; they have never been incapacitated for work by lameness, or disease of any kind, and have always been perfectly sound and healthy. If driven through Broadway, New-York city, they would attract general attention. I have another pair of sorrels that are 18 years old, which labor daily, and will do as much work as any pair of six years old in the town in which I reside. Dr. Hosack, when he died, left a horse 28 years old, which I have frequently seen, and which was a very pretty animal, and would have passed for a middle age horse to any casual observer. Mr. Youatt quotes the record of a horse that received a ball in his neck at the battle of Preston, in 1715, which was extracted at his death, in 1758; he was, consequently, 43 years old.

I have made the following rules for my own governance:

1st. The stable in which horses are kept should have a southern exposure. The ground ought to slope gradually from it, to carry off the moisture. It should be kept perfectly dry, as dampness is exceedingly detrimental to horses, and will engender humourous diseases.

2d. The stable valuable for carriage or race horses, should never contain more than five stalls, and a sixth one ought always to be constructed of greater size for one of them if somewhat indisposed. If particularly sick, he should be removed; as contagion might be imparted to the others. If a stable contains a number of stalls, when five or six horses are on duty, the temperature would be so changed as to endanger the health of those remaining.

3d. The stalls should be five feet six inches wide, and always arranged on one side, instead of being placed opposite each other, with an alley between, as is usual, for the reason that horses ought not to breathe each other's breath. The carbonic acid gas exhaled, would be detrimental to each other, and if one should happen to be diseased, the others might, by constantly inhaling his breath, become infected.

4th. Stone floors should on no account be used in stables, for the reason that they are exceedingly cold, and apt to induce catarrhs, besides being slippery in winter, causing falls, and often injuring limbs. Three inch pine or square plank, tongued and grooved, should be laid perfectly level, after which a slight gradual slope may be planed, leading to the centre, where a grating of iron bars,

an eighth of an inch apart, should be firmly set in a frame, so that it may be taken out at pleasure, through which the moisture would pass into a drain under the floor, leading into a cistern; traps must be so constructed in the drains underneath, that the ammonia may not rise; if it does, and there is no ventilation above for it to escape, the horses will become blind after much exposure.

5th. The stable must be airy, and to make it so, there should be a window at either end, covered with copper wire cloth, which will not rust and corrode, and a ventilator above to carry off as it ascends the impure air, which, being lighter than the atmosphere, immediately rises to the ceiling, and will at once escape if an opportunity is afforded it. If there is danger of too much air being admitted by the windows, the bottom of the stable door may be latticed with the slope turned upwards, and covered with copper wire cloth, which will cause the unwholesome gases to rise immediately to the ventilator. Five horses will, in a very few hours, destroy the vital principle of air in a confined, close stable. The carbonic acid gas ejected from their lungs, is a deadly poison, and totally unfit to be again received by respiration. It is not only their breath that must be avoided in stables, but the exhalations continuously arising from their bodies. It should be generally understood that pure air is as necessary to horses as to human beings.

6th. Stables must be kept comparatively speaking light, and of equal temperature; in summer about 65°, and in winter from 45° to 55°. If this rule is not observed, the horses will suffer with rheumatism, stiff joints, inflammation of the lungs, and numerous other diseases. It should be recollected, that we have no domestic animal existing in a more artificial state than the horse, or one requiring more care and attention. It is very rare that a horse is found useful to man after he is 14 years old, when, by observing a few rules, and following them strictly, he may be made to last and labor constantly until 25 years of age.

7th. Never trust your horses to any other than an experienced groom; let his duties be as follows:

1st. At day light in the morning, to place hay in the rack, in order that the horse may distend his stomach to the proper proportion before he receives his oats. If oats are first fed, he will satisfy himself with them, and not relish the hay; the consequence will be, he will present a gaunt and half fed appearance during the day, annoying not only the coachman, but the master.

2d. To clean the stable, carry out all the straw litter, separate the dry from the wet, place the wet in the manure heap, and expose the dry in the open air for the ammoniacal gas to escape, and purify it for use as bedding at night; sweep the stable perfectly clean, spread a thin coat of charcoal dust in the stalls, to absorb the ammonia. The usual mode is to roll the wet litter day after day under the manger, and force the horse to inhale the gas arising from it, often entailing disastrous consequences, besides infecting his food, and rendering it unpalatable. Sufficient time having elapsed, while the groom was clearing the stable, for the animals to consume their hay, he proceeds.

3d. Water the horse, and immediately after give him his usual feed of oats or other grain.

4th. Curry and brush the horse thorougly, and well rub his legs, in order that the pores of the skin may be opened, the scurf removed to excite insensible perspiration, and the blood caused to circulate freely. Wash his eyes and nostrils with a sponge, to free them of dirt; take out all the sand and dirt that may have become fastened in and under the shoe, and comb his tail and mane. This rule may appear superfluous; still, next to food, it is the most important, and must be insisted upon by the proprietor, if he desires his horse to enjoy health, strength, constitution, and a fine glossy coat. High grooming and exercise fit the racer and trotter for the endurance of the fatigue of their great exploits, and show the importance of care at all times to horses.

If my arguments have not been such as to convince that soiling is by far the best, I will offer a few additional reasons, which may appear more convincing, inasmuch as they are calculated to save thousands of dollars. All are well aware that the most expensive item about a farm, is fencing; nine out of ten of all the farmers in our State, and other States throughout the Union, if they are compelled to borrow money at all, borrow it to cover their farms with expensive, and if they soil their cattle, entirely useless fences, for they are of no earthly use, except to keep animals within certain bounds, and if they are not permitted to run at large, the only fence required is one surrounding the farm.

In the first place, the material is very expensive.

In the second place, they occupy a great deal of room, which, on a rich soil, might be advantageously used for agricultural purposes.

In the third place, they prevent the soil from drying rapidly in their vicinity after showers, consequently detering the plowman, when the rest of the field requires his labors.

In the fourth place, the snow in winter drifts against them in large quantities, where it remains piled up very late in the spring, to the annoyance of the farmer.

In the fifth place, they furnish a capital and secure cover for foul weeds, which are rarely eradicated, owing to the labor required, and which spread contagion over the whole field.

In the sixth place, they are resorted to by mice, insects of all kinds, birds, &c., which sally out when the husbandmen are absent, and do inconceivable damage to the growing crop.

In the seventh place, they are excessively in the way of the plow. The headlands of cultivated fields generally, are always rough, full of weeds, and covered with briars.

In the eighth place, if made of ditches, they take up a vast deal of room, are continually filled with partially stagnant water, produce malaria, induce fevers, and not unfrequently render a whole family incompetent to labor.

Soiling the Ox.

The ox is one of the mammalia class; order ruminantia; tribe bovidæ, and genus bos. The sub-genus of which I intend to speak is bos taurus, or the domestic ox, whose native country is supposed to have been the fertile plains at the foot of Mount Ararat. When driven from the ark he was a domesticated animal, at least such is the inference naturally drawn from the fact, that mention is made of the ox as being the servant of man in the antediluvian age, soon after Adam was expelled from the Garden of Eden. It is recorded, that Jubal, the son of Lamech, and who was probably born during the life time of Adam, was the father of such as dwell in tents, and of such as have cattle. If then the ox was domesticated before the flood, it is natural to suppose he was so when he left the ark, and since that he has been found in every country inhabited by Noah's descendants, and has always been indispensable to mankind. Among the ancients he was considered the most valuable portion of their wealth. When Abraham was in Egypt, one hundred and eighty years before the horse was mentioned, Pharaoh presented him with oxen.

The ox was held sacred by the Egyptians, who elevated him into one of the twelve signs of the Zodiac (Taurus); at this time he is held sacred by the Hindoos in India, and venerated in every Celtic nation as divine. In Great Britain he constitutes a large portion of her wealth. She only has 1,500,000 horses, but more than 8,000,000 of cattle, 160,000 head are sold every year in one of her markets, without including calves, or animals brought in from the country, and sold by the farmers in the dead market. Since their introduction into Great Britain, they have become much changed in size, form, and value; climate appears to have great influence upon them; but proper food and judicious management has done more to increase their value, than any other agency. In the Commentaries of Cæsar, we find that the Britons owned immense numbers of cattle very early in the day, when they were used chiefly as food, and not as beasts of burden, so that the English inherited their particular partiality to the ox as food from the earliest date; and I am somewhat surprised that English poets should not have immortalized the ox in song, when they have condescended to notice all other domestic dependants, even the ass. When the ox is uneducated he appears stupid, and apparently devoid of instinct; how different is he when permitted to receive instruction, and taught to plow our soil, and draw our wagons; he at once shows great aptitude, is easily directed by word of mouth, and not unfrequently exhibits great attachment to his driver.

In other countries we find the intellect of the ox more developed, than in Great Britain, or this country. Burchell, who travelled much in Africa, says in his first volume, page 128: Oxen in Africa are generally broken in for riding, when they are not more than a year old. The first ceremony, is that of piercing their nose to receive the bridle; for which purpose they are thrown on their back, and a slit is made through the septum, or cartilage between the nostrils, large enough to admit a finger, in this hole is thrust a strong stick stripped of its bark, and having at one end a forked bunch to prevent it passing through; to each end of it is fastened a thong of hide, of a length sufficient to reach round the neck and form the reins; and a sheep skin, with the wool on, placed across the back, together with another folded up, and bound on with a rein long enough to pass several times round the body, constitutes the saddle. To this is sometimes added a pair of stirrups, consisting only of a thong with a loop at each end, slung across the saddle; frequently the loops are distended by a piece of wood, to form an easier rest for the foot. While the animals are still sore, it is mounted and put in training, and in a week or two is generally rendered sufficiently obedient to its

rider. The facility and adroitness with which the Hottentots manage the ox has often excited admiration: it is made to walk, trot, or gallop at the will of its master; and being long-legged and rather more lightly made than the ox of America, travels with greater ease and expedition, walking three or four miles in an hour, trotting five, and galloping on an emergency seven or eight. Major Denham, in his travels in Central Africa, says the ox is the bearer of all the grain and other articles to and from the markets. A small saddle of plaited rushes is laid on him, when sacks, made of goat skins, and filled with corn, are lashed on his broad and able back, and on top of the load is mounted the driver. Sometimes the daughter or the wife of a rich Shonaa will be mounted on her particular ox, and precede the loaded animals, extravagantly adorned with amber, silver rings, coral, and all sorts of finery; her hair streaming with fat, a black rim of kohal, at least an inch wide, round each of her eyes, arrayed for conquest at the crowded market. Carpet or robes are then spread on her clumsy palfry,—she sits jambe de ca, jambe de la,—and with considerable grace guides her animal by the nose. Notwithstanding the peaceableness of his nature, her vanity still enables her to torture him into something like caperings and curvetings.

Among the Hottentots, these animals are their domestics, and the companions of their pleasures and fatigues; they are both the protectors and servants of the Caffre, and assist him in tending his flocks and guarding them against every invader. While the sheep are grazing, the faithful ox stands grazing beside them; if they attempt to stray away, he runs round them, and obliges them to keep within proper limits, and shows no mercy to robbers who attempt to plunder, nor even to strangers; but it is not the plunderers of the flock alone, but even the enemies of the nation that these oxen are taught to combat. Every army of Hottentots is furnished with a proper herd of these creatures, which are let loose against the enemy; being thus sent forward, they overturn all before them; they strike down with their horns, and trample with their feet, every one who attempts to oppose them, and thus often procure their masters an easy victory, before they have begun to strike a blow. He is rewarded by being allowed to live in the same cottage with his master, and by long habit gains an affection for him; for in proportion as the man approaches the brute, so the brute seems to attain even to the same share of human sagacity. The Hottentot and his ox thus mutually assist each other; and when the ox happens to die, a new one is chosen to succeed him, by a council of the old men of the village, and is taken for life into human friendship and protection.

There is a well authenticated story of a Scotch bull, which shows similar but not equal sagacity. "A gentleman in Scotland, near Laggan, had a bull which grazed with the cows in the open meadows. As fences are scarcely known in that part, a boy was kept to watch, lest the cattle should trespass on the neighboring fields, and destroy the corn. The boy was fat and drowsy, and was often found asleep; he was, of course, chastised whenever the cattle trespassed. Warned by this he kept a long switch, and with it revenged himself with an unsparing hand, if they exceeded their boundary. The bull seemed to have observed with concern this consequence of their transgression, and as he had no horns, he used to strike the cows with his forehead, and thus punish them severely, if any of them crossed the boundary. In the mean time he set them a good example himself, never once straying beyond the forbidden bounds, and placing himself before the cows in a threatening attitude if they approached them. At length his honesty and vigilance became so obvious, that the boy was employed at other business, without fear of their misbehavior in his absence." Many centuries ago, when Great Britain was invaded by the Romans, they neglected their cattle, and large portions of the country was covered with forests, into which the animals strayed, became wild and numerous; as the country was settled they disappeared. A few still remain in Chatelherault Park, owned by the Duke of Hamilton, in Lanarkshire; and in the Park of Chillingham Castle, in Northumberland, the seat of the Earl of Tankerville; they are kept for curiosity, their color is uniformly white or cream, and their nose black.

The breeds of cattle now found in Great Britain, and from which we have derived our stock, have attained their present size, beauty of form, and capacity to fatten, by breeding, crossing and feeding within the short period of fifty years—and almost every district on the Island has its breed of animals—which are classed by the size of their horns; as for example: the long horns improved by Mr. Bakewell, of Leicestershire; the short horns, from East York, improved in Durham; the middle horns, a distinct breed, inhabiting Devon, Herefordshire and Gloucestershire; the crumpled horn of the coast, and the hornless cattle of Suffolk and Norfolk. The cattle are always large where the pasturages are rich, and fall off in size and beauty in proportion to their privations; so among the Welch hills the ox becomes a miserable runt.

Of all the varieties, I believe it is pretty generally acknowledged that the middle horns, or Devons, are the native cattle of Great Bri-

tain. They nearly resemble, in form, the wild cattle before spoken of, as belonging to the Duke of Hamilton and others. Mr. Herbert, a writer in the English Farmers' Magazine, thus describes the Devonshire ox, "Nimble and free, outwalking many horses, healthy and hardy, fattening even in a straw yard, good tempered, will stand many a dead pull, fat in half the time of a Sussex ox, earlier to the yoke than steers of any other breed, lighter than the Sussex, but not so well horned; thin fleshed, light along the tops of his ribs, a sparkling cutter, and lean well intermixed with fat." Of the cow, he says, "Red, starred, or white-faced, better horned than the ox, very quiet, the playmate of the children, a sure breeder, a good milker, a quick fattener, fair grass-fed beef in three months." This breed, I have no doubt, is the origin of our deep red cattle in this country; they are universally called Devonshire by our farmers, and will answer Mr. Herbert's description. The finest oxen we have in this State are raised in Connecticut, and are, no doubt, derived from this very breed.

Being the most ancient in Great Britain, it was probably brought here by the first settlers. It is generally supposed that our domestic animals are descended from the wild buffalo race, and that they have been brought to their present perfection by the force of circumstances, climate, food, &c. I cannot believe this possible. When a small calf is dropped on my farm, I immediately examine his points, and if his legs are short, bones small, hips rather large, flanks deep, ribs and hips near together, straight on the back, has a clean, projecting eye, thick, loose skin, small nose of a light color, I invariably save him; and if not desirous of raising him, give him to some neighbor, exacting a promise from him to bring him up carefully.

An animal presenting these points, should on no account be killed, whether the breed is considered good or bad, as he will be an acquisition to any farmer, 1st as a bull, 2d, as a working ox, and 3d, as prime beef. A calf of this description, having symmetrical properties, will acquire a good constitution, great bulk, and become what is emphatically and technically called a splendid animal, provided he is allowed to remain with the cow; the first week he will take half her milk; when one month old he will take all her milk; at two months old he will take the milk of two cows, and a feed each day of gruel made of wheat bran; at three months old he will eat a large quantity of green grass and two feeds of gruel; the second cow must now be taken off, and he may be left with his mother, and the deficiency of nourishment made up by other food, such as ship stuff, boiled roots and grass. At the expiration of five months he may be weaned.

When one year old, this animal will weigh half a ton, and will be worth as much as the two cows that brought him up.

Such has been the result of an experiment I have tried; but please remember, the calf must present the points before mentioned. The usual mode practiced, generally speaking, in this country and England is, to allow the calf to suck the cow three times each day, at stated hours, for three days, after which it is taken from the cow, and fed three times each day on her milk, for one week, then twice each day for a month, when it is sold to the butcher for twenty shillings, having eaten $7 worth of butter; or if intended to be raised, is turned into a pasture lot, where it obtains a scanty subsistence, and at one year old weighs 400 lbs., and may be bought for $1.00, and is dear at that, having no constitution, and being subject to diarrhœa and numerous diseases of the œsophagus, inducing consumptions, which in animals is contagious and may be imparted to a whole herd. The œsophagus is the tube through which the food when first eaten is conveyed into the first stomach, afterwards it again passes back while the animal is ruminating, through the same channel, undergoes a second mastication before being conveyed into the digestive stomach; plainly showing that the œsophagus performs severe duty, and the consequent necessity of preventing disease from attacking it.

This is only effected by proper food; suppose a child should be taken from its mother's breast, at three days old, and fed upon skimmed milk, how would he compare as far as constitution is concerned, with the child brought up in the usual manner. At birth the calf has but two central teeth, at the end of the second week it has four, at the end of the third six, when one month old he has eight; at two months the edge of the four central teeth are somewhat worn, at eighteen months all the centre teeth or incisors are very much worn, and the corner teeth will not be more than half their natural size; when two years have elapsed the two central teeth are pushed out by two permanent teeth or incisors, when four years old the steer will have six permanent teeth, and two milk teeth, when five years old he will have eight permanent teeth, at six years old the eight incisors will all be the same size, and all flattened on the top; at ten years old the four incisors in the centre will be greatly diminished; at eleven years the six central teeth are still more diminished; at twelve they are all small, and the inside worn down as low as the gum; at sixteen years the animal can only live on meal and soft food, on which he will exist until the age of twenty-one years. When the ox is four years old he has thirty-two teeth, viz: eight incisors in the lower jaw, three molars in each upper jaw, and below on either side.

So that you perceive the true test to discover an animal's age is by the teeth, instead of the horn; dealers in stock frequently file off the rings on an animal's horn, consequently it never can be considered a certain test of age; the teeth however will never deceive you. You must not consider the manure derived from the ox half as valuable as the excrement of the horse, principally for the reason that the food of the ox undergoes a double process of mastication, extracting nearly all the nutriment it contains; whereas the horse extracts but a very small portion. This fact is plainly manifest to any person who examines the fœces of the two animals; in that of the ox will be found no vegetable fibres, whereas that of the horse will be chiefly made up of such substances. If a large ox will eat in a year 7000 lbs. of straw and other substances, he will yield 16,000 lbs. of manure; a horse fed upon 7000 lbs. of provender will only yield 11,000 lbs. of manure; still the 11,000 lbs. will be intrinsically worth twice as much as the 16,000 lbs. voided by the ox.

My oxen are never permitted to run at large in the fields, but are kept in stalls summer and winter. During the summer they are constantly employed, and will work throughout the week, during the warmest day in August, without lolling; to enable them thus to labor I find it necessary to treat them with the same care and attention usually bestowed upon the horse; like the horse they cannot work upon green food; it is indispensable that they should have at least one feed of dry hay each day, together with one meal of indian meal or ship stuff; their stall must be spacious, well lighted and airy, and the temperature kept at about 60°; they will consume one-third less food in winter in that temperature, than they would exposed to the inclemencies of the weather; damp walls and exposure to cold rains is extremely detrimental to them; they should be regularly groomed, watered four times each day, salted twice a week, and fed at regular hours, but never fed more at a meal than they can consume; and vary their food as often as possible. They should always be driven and taken care of by the same man. I have a yoke of oxen that will invariably run away with any other than their regular attendant; but with him they never attempt such a step; they will permit him to ride upon their backs, but if any other person has the temerity to mount them, he will be immediately thrown off. There are seasons in the year when your oxen are little used, and as it is indispensable to the well being of the animal that his muscles should be employed in order that the process of absorption may be accelerated, he should not be deprived of exercise, as he may lose the power of contracting and expanding the foot, rendering him unserviceable when required for duty; to avoid this your

ox stalls might be enclosed, so that it may be unnecessary to tie the animal by the head; let them be eight feet wide and twelve long, with the manger and rack in the end; he will then keep himself perpetually in motion, his muscles will be constantly performing their natural functions, and lameness, the chief calamity to be dreaded, will be avoided. The leg of the ox is much more complicated than the horse, inasmuch as it is divided at the fetlock, and he consequently has two hoofs, two sets of pasterns, and two coffin bones—each having its own tendons and ligaments, and each covered by a separate integument, giving rise to numerous inflammations. The hoof is often irritated by small stones, and other substances, which insinuate themselves between the two claws, causing intense pain, and great annoyance to the pasterns, which at once swell; cattle are constitutionally liable to diseases in their feet, such as the foul foot, &c., not unlike the rot in the feet of sheep; I usually work oxen on the farm from four years old to seven; when seven years old in the fall of the year, they are only worked one day in the week for exercise, and generously fed on simple food, such as beets, turnips, cut-straw, corn stalks, &c. On the 1st of November they are stalled at night, allowed good beds of straw and curried, and kept perfectly clean; during the day when the weather is mild, they have the run of the yard, in order that they may exercise, which is essential to the life and health of every living animal; the flesh becomes richer and more palatable, and the fat taken on is greater and more wholesome than formed by those deprived of exercise, and kept always in confinement; the fat then becomes a disease, as the animal is constantly fretting, inducing fever, diminishing the gelatin, albumen and fibrin, besides rendering the flesh stringy, indigestible, flabby and tough. The object I have constantly in view is, when fattening a beast, to obtain marbled flesh, fine fibre, and delicately fine grained meat, and this can only be obtained by exercise in the open air, and proper food. In winter I feed my oxen sugar beets, potatoes, wheat-bran, a small quantity of oil cake meal, &c., occasionally raw, frequently boiled—but place more confidence in carrots as food, than any other root crop. From the few experiments I have tried with that root, as food for cattle, I am convinced that a stock farmer might derive great profits by feeding his store cattle say 20 lbs. of hay per day, and as many carrots as they would eat, clean, one day boiled and the next raw. Although the carrot (Daucus Carota,) was introduced into England by the Flemish refugees in the reign of Queen Elizabeth, no attention was at first paid to its culture, as we find it was imported into England from Holland towards the close of the sixteenth century, to supply the London market. It is very farinaceous, yielding 270 lbs. of flour from 1000 lbs. of roots, 1600 bushels may be raised to the acre.

THE HOG.

Having commenced with the cow, certainly one of the most useful animals existing, I will terminate with the hog; which, for its size, is undoubtedly the most valuable of all created animals; no other animal supplies so large a series of savory food for the christian, no animal was more esteemed by the ancients, every inch of him is turned to account, his ribs form that delicious morsel known as the spare rib, his sides the flitch, his legs the ham, his neck brawn, his head, cheeks, the ears are made into souse, the tongue pickled, the intestines are used as covering for sausages, and his skin, when tanned, for saddle covers; without his bristles how could we exist. No part of this most extraordinary animal is lost; he is abhorred by the Jews and Turks, and worshiped by the Chinese; throughout that vast empire the hog is held sacred, and kept in what they term Josh houses, where he is fed and daily ornamented with rich diamonds, and rings of gold; the Chinese fall down before him, and worship until he grunts, when the favor demanded is supposed to be granted. There are several species, which are divided into three genera, all derivable from the wild boar, (sus aper,) a native of Asia, Africa and Europe, (sus barbirassa) of the Archipelago Islands, (sus papuensis) of Guinea; the phacochœres of Africa, and the peccaries of America. When America was first discovered there were no hogs found, the first settlers of Canada are supposed to have introduced them here; some of the breed still resemble those of England, known at that early day. Since then by our extended commerce, we have introduced many fine crosses, from China, and by attention to them, have as fine hogs as can be produced in any part of the world; they will soon become one of our most important articles for exportation to foreign lands. We now consume far more pork than any other nation. A farmer in our Western States numbers four thousand hogs; in Michigan there are men I know, who have had 3,400 shut up to fatten at one time; there are now more than 4,000,000 annually fed in the United States, and they consume 200,000,000 bushels of corn.

In the State of New-York, by the census of 1846, we had 1,584,344—in 1830 the consumption of pork in England was only 24,448,512 pounds.

It is said that a singular change comes over the wild hog when tamed, his ears become less moveable, his tusks diminish more than half, his back becomes much longer, his body enlarges much,

his limbs become shorter, and weaker, he sleeps at night and partakes of his food in the day time, when wild he feeds at night, the muscles in his neck diminish very perceptibly, and his appetite is almost insatiate, the boar becomes gregarious, and the female produces young more frequently and in increased numbers; the teeth diminish to three in each jaw, from six in the wild state. Probably the finest breed of hogs now known in the world, is the Berkshire, and he is fine from the fact that he has been cultivated from an early period to the present time; he was probably derived from a cross between the wild boar of England, and the Chinese; his progeny is now widely distributed, not only in Europe, but this country. I am inclined to think this breed has less offal than any other now known; his skin is thin, bristles light, and bones fine. Every breeder should obtain one or more of this breed as cross; he bears unqualified approbation both abroad and at home.

The Chinese are widely raised in England; they were obtained originally from Canton; this climate agrees very well with the cross between it and our native hogs; in a pure state our climate is generally too cold for them; they are fine in the limbs, the ears are transparent and small, head small and delicate, neck very thick, body beautifully formed, meat fine grained, rich and luscious, the skin is thin, and the snout, when the animal is fat, can scarcely be seen. I would recommend them only as a cross. I once had a very fine boar and a sow, they were always suffering from the cold, bad breeders and miserable nurses; if kept warm, they will fatten readily, and on a small quantity of food.

The Woburn breed has been introduced here from England; they are fine formed animals, quite large, and good breeders; they grow rapidly, being inclined by nature to fatten easily. They were first introduced into England by the late Duke of Bedford.

According to experiments made by " M. Teissier on the gestation of animals, it appears that the extreme periods of 25 sows were 109 and 143 days; from which he inferred, that on an average, they go 127 days from the time of taking the boar until they farrow." Both the boar and sow desire coition when nine months old; they should not, however, be permitted to indulge until one year old; before that age the sow cannot be expected to produce a strong litter of pigs. In a recent French work it is said regarding the sex of the progeny, " that among females who receive the male only once, those who receive him first produce generally more males than females. In proof of which the author, among many instances of similar nature,

adduces the following: A boar was admitted on the same day to two sows of two years old, of the same strength, and the issue of the same litter; the first produced nine males and a female; the other, nine females and a male. A young boar about five months old, was afterwards admitted to two sows of the same litter as the boar; the one which first received him, produced five males and two females; and the other, four hours later, six females and two males. He therefore recommends attention to the fact in the reproduction of all domestic animals; and, if it be supported by further experience, the hint may be found useful to the breeders of neat cattle and horses."

When you make choice of a boar, never on any consideration choose an animal with a large head, and narrow breast; let his head be small, barrel sound, chine arched, and of compact form; let the sow have a capacious stomach and twelve teats; each pig when it is born selects a particular teat to which it strictly adheres until weaned. If there should be more pigs than teats, the supernumeraries must be destroyed; a sow should not be allowed to raise more than six or eight pigs, according to the size. The boar should not cover more than twenty sows in a season, and requires to be remarkably well fed to do that, and the sow will bring up her progeny in proportion to her keep. I do not mean that she should be fed high, but kept in good heart. Sows that are permitted to take the boar in the months of May and November, will farrow in August and February, decidedly the best months. Farmers, as is usual, should never continue for a long time to breed "in and in," as by so doing the breed will become bad feeders, and lose in weight. The male and female should not be related. The same rule applies to human beings; relatives should never intermarry. When your sow carries straw you may be sure she is about to farrow. She must be watched and her young carefully abstracted as they are born; if she is a young creature, she may possibly offer to eat her young, which not unfrequently happens. If you suspect her capable of so great a crime, rub their backs with bitter aloes, before you return them to her. Forty swine will probably produce 300 pigs for their first litter.

"Instances are on record of a sow, which in twenty litters, produced 355; and of one which farrowed thirty-seven at a birth; from 15 to 20 are not uncommon;" 7 to 12 is the most usual number. "A sow has been known to bring up 177 pigs in thirteen litters." For the first week after farrowing, the sow should be fed gruel made warm, and occasionally some strong beer mixed with it, afterwards she may have the refuse of the kitchen made lukewarm, buttermilk

with a mixture of warm boiled potatoes, and skimmed milk, &c. When the pigs are 20 days old, the males should be castrated; and the females spayed when 40 days old. When the pigs are 14 days old, they should be fed twice each day by themselves with milk or gruel, besides receiving the usual nourishment from their mother. When 60 days they should be weaned, and if the breed is good, ought to weigh 40 pounds. In case you desire something very fine for your table, allow two or three to remain with the sow until they are three months old; feed her generously, and feed them skimmed milk; at three months old, they will be a great delicacy, and will weigh 75 lbs. Those pigs intended for market at a year old, may be allowed the run of the barn yard where cattle are soiled during the summer, and they will obtain sufficient to keep them in fine growing condition. In the fall they may be fed on apple pomace, sweet or sour apples, or boiled potatoes, carrots, &c., until they are eleven months old, then feed them one month on Indian meal, say two and a half bushels to fifty gallons of water, after it has been allowed to ferment until it becomes quite acid, and occasionally a few ears of corn in the cob to keep their teeth firm. Once or twice a week give them charcoal; at one year old, if judiciously fed, your hogs should weigh between 275 and 300 pounds each. Twenty cows will yield skimmed milk sufficient to fatten 13 hogs in one year, each weighing 300 lbs, without any other food except occasionally a small quantity of Indian meal. Chinese hogs attain their full size at one year old, therefore it is not worth while to keep them longer except for breed. The Berkshire, grows as much the second year as they do the first, in fact they have been made to weigh over eight hundred pounds at two years old. In the Devonshire survey, page 356, it is mentioned that a pig of a breed from various crosses, fed upon milk and potatoes, and finished upon four and a half bushels of barley meal steeped, weighed when killed at 10 months old, 182 lbs, exclusive of the head and feet. Marshall mentions his particulars of practice in the fattening of swine, which is worthy of notice. "In one, salt was mixed with their food, in the proportion of a pint to every two bushels of barley meal, under an opinion that it kept them from disorders, forwarded their fattening, and added to the delicacy and flavor of the pork. In the other, the meal of flour, whether of barley, pease or other grain, was given to them dry, and this is the practice of one of the largest and best farmers on the Surrey hills, under a conviction, resulting from experience, that the practice is less wasteful than the ordinary one of mixing water with the flour and forming it into grout, which in winter is liable to be frozen, and in summer to be baked to the sides of the troughs."—Southern Counties

England, vol. II., page 416. An experiment was also published by a farmer, who stated that he took two pigs of the same litter and of similar weight, and fed them apart, one upon barley meal mixed with swill or wash, and the other with dry meal, having his drink given him an hour afterwards. At the end of six weeks, both were weighed, and the hog fed upon dry food, was found to be one stone, 14 pounds heavier than the other.

"Regarding steamed food, it having been very generally assumed in England that steamed roots, potatoes especially, were preferable to raw in the feeding of neat cattle and swine, the Highland Society, in 1833, offered premiums for trials on the subject, several of which were made, from which it would appear, that any advantage which might be gained by such preparation of food for oxen and hogs, was counterbalanced by the cost of fuel and labor. It is generally supposed that hogs are particularly inclined to filth; such is not the fact; they are, on the contrary, exceedingly neat, and will invariably appropriate a portion of their pen for excrementitious matter; the object he has in rolling in mud, is to rid himself of flies, and cool his skin; no animal appears more to enjoy a dry straw bed than the hog; cleanse his pen often, and after feeding, always remove the remains of food; do not permit him to gorge himself, if you do, indigestion will be the consequence; a hog fed at regular intervals will rarely meet with this annoyance. Cutaneous disorders sometimes attack him, ending in scabs, which is generally brought on when the animal is confined in a close place without air, or fed on improper food; when this disease makes its appearance, give the animal from half to one and a half ounces of sulphur and nitre mixed."

I have on my farm, an orchard of choice grafted trees, bearing sweet apples, planted expressly for hogs; this is the principal food on which I feed them during the latter part of the summer and fall, sometimes sour apples are given them by way of variety, and occasionally the refuse of the garden; those intended for the butcher, have in addition, slops from the kitchen, and after the cider is made, they receive as much pomace as they can eat three times each day, at regular intervals; as for corn, they rarely get sight of it, except occasionally for the last two weeks of their lives, they are fed upon corn meal made from the cob and kernel which are ground together and allowed to ferment and become acid before it is given them. This was not my former practice, but I have an idea that corn meal has a tendency to harden the fat and render it less oily. To feed hogs on corn as usually practiced by our farmers, without taking the

value of the corn or quantity fed into consideration, is ruinous in the extreme, if the manure is permitted to waste as it frequently is. Corn is known to consist of the most important elements of nutrition, not only to cultivated plants, but to the animals themselves, as it chiefly contains potash, nitrogen, muriatic acid, carbon, phosphoric and sulphuric acid, soda, magnesia and lime, portions of which are returned to the farm in the form of dung and urine, and if preserved from atmospheric influences, and judiciously applied to growing crops, particularly those requiring highly nitrogenized substances, will enable the practical farmer to derive by the most economical method of aiding and assisting nature, a crop not only abundant, but rich in phosphates, gluten, &c When hog manure ferments in the open air, all its volatile gases are immediately converted into ammonia, and escape into the atmosphere; as your seed cannot grow without it, the loss is severely felt. Therefore do not go to the expense of feeding corn, unless you intend to preserve the excrement, as hogs may be fed and fattened on cheaper substances.

A few years since, I put up two hogs in separate pens, each about four feet square, and fed them for four months, alternately on sweet and sour apples, they were not allowed a particle of any other kind of food, nor did they receive a single drop of water during that period; when killed, they weighed 150 pounds each, and were covered with a thick layer of fat, perfectly white and firm. The skin was thin, and the pork pronounced by connoisseurs exceedingly sweet and fine. The hams were not inferior to Westphalia. My hogs are generally soiled, and seldom permitted to run at large. I find them very useful in the barn yard; they consume the leavings of all other animals, whether trodden under foot or not, which, were it not for him, would be lost, instead of being converted into rich food; although the poor hog will consume all refuse matter that comes in his way, still if you offer him a choice of dainties, you will soon discover that he is a great epicure, and that he will fastidiously select the most nourishing! Try the experiment, throw before your hogs turneps and potatoes together, and you will observe that they will not deign to put a tooth in a turnep, until the potatoes are all consumed; if beans and oats are fed together the beans will first attract his attention, and the oats will be left until they are eaten up; if corn and beans, the corn will disappear before the beans. I have often thought when observing their discrimination, that they knew far more about analytical chemistry than I did; no chemist could discriminate as those hogs did, before going through an elaborate analysis, and yet their sagacity is such, that they will select between two species of food at

once, and select one in preference to the other if it contain but five per cent more of saccharine matter. Two years since, I allowed a favorite sow with her litter of pigs, which were about sixty days old, to run in the orchard for a short time; she had not been there long, when I observed the lower limbs of many trees stripped of their fruit, as they were much too high for the sow to reach, she was of course, not suspected. Enquiry was made but no one knew where the apples had gone; as I had less to do than any of my men, I determined to watch, and at length to my astonishment, discovered the sow standing on her hind legs with a limb of the tree in her mouth, which she shook most lustily, and the young ones made free with the fruit as it fell. I saw her do this thing repeatedly. She was afterwards detected sucking one of my cows in the yard. This animal was four years old, and weighed, I should suppose, nearly four hundred pounds.

The hog is very prolific. Vanbau made a calculation, showing that in eleven years, a single sow, averaging each litter at six pigs, formed ten generations, or 6,434,838 pigs. He further observes, that were the calculations extended to the twelfth generation, the result would be as great a number as all Europe could support, and extended to the sixteenth generation, would outnumber the inhabitants on the globe.

ROBERT L. PELL.

Pelham Farm, Ulster county, N. Y.

SOILING OF CATTLE.

By Henry A. Field, of New-York.

The soiling of cattle has been highly recommended by our Agricultural writers, and by many distinguished farmers who have employed the system advantageously.

During the last three years, I have kept my farm stock partially after this plan. I have seen many advantages result from it, but yet have become fully satisfied that soiling can be economically practiced only under favorable circumstances.

If land is valuable in consequence of its contiguity to a market, where a good price and ready cash can be obtained for its productions, especially milk, or if the grounds are laid out in lawns, covered with shrubbery, nurseries, young orchards, &c., then, if it is desirable to keep stock at all, it would be unquestionably best to soil them. So also it would be under almost any circumstances, desirable to soil or keep up working cattle and horses, for they are then always ready for the yoke or harness, without the trouble of going in the pastures for them; besides, it is much better to feed the animals that kind of food which would be more proper for them while at work than grass only. Again: much would depend upon the description of produce, that the farmer expects to obtain from his cattle. If he intends making butter, or cheese, then the soiling system would not answer. The only plan to obtain a good article of fine flavored butter or cheese, is to afford the cows an unrestrained range in a good pasture. I think there must be, and it is the opinion of others much better acquainted with the subject than myself, certain plants growing in the pasture, which give to butter and cheese their rich color and flavor, which the cows find when they range at large. At any rate, I never yet have seen fine colored butter made while cows were kept up on any feed; and I have fed grass, clover, green oats, rye, and corn, cabbages, turnips, potatoes, beets, &c. I intended to-day to exhibit to the club a specimen of butter made from a

cow fed with warm swill and hay. It was as white as lard, and almost as tasteless. A few days since, I was in the cellar of a country merchant, and saw there a number of specimens of butter from some of the best farmers of Dutchess county. Almost every parcel was of a white color. I am aware there are large quantities of fresh butter sold in the winter and spring that possess a good color, but a little experience in the art of coloring is only sufficient to give either cheese or butter any desired color. The greatest advantage to be derived from soiling cows is, the quantity of manure that can be obtained from them, and a regular and abundant supply of milk.

According to the experiments of Mr. Pell, which he communicated to the State Agricultural Society, published by them in their Transactions, for 1844, it would appear, that to keep cows, except for their manure, would be attended with ruinous expenses. Five cows gave, each, under the most favorable circumstances, sixteen quarts of milk. Fourteen quarts of good milk are allowed for one pound of butter. I do not believe that sixteen quarts of milk, from soiling, would more than make a pound of butter; at any rate, a cow that would average one pound of good butter per day is a first rate cow. Estimating this butter at 1s 6d per pound, his five cows would yield 7s 6d per day. What would such an income do towards paying the expenses of the animals, buildings, land, seed, labor, &c. He made however, a large quantity of manure, but the bulk of this was straw, weeds, leaves, &c.

To make manure from stock, it is necessary that they should be either enclosed in a yard, or tied up. The only reason assigned why the manure does not give its full benefit in pasturage, is, that a great proportion of it evaporates. Those who soil their cattle, and turn them in a lot, therefore lose the most valuable substances in the manure. It is, no doubt, better to give the animals the benefit of a small enclosure for exercise, &c., but yet, if it is desirable to make manure, these advantages must be sacrificed. I have always found it was better to keep stock tied up constantly, than to suffer them to roam a part of the season, and then confine them at other periods; for they would always show its bad effects in their milking, and appetite for food. When animals are tied up constantly, but suffered to go to drink at stated intervals, they after a time, become accustomed to it, and do as well, as far as I have observed, as if turned out; especially when the pasturage was not regular, as it sometimes is in dry hot seasons. But yet this was only in reference to their condition and quality of saleable milk, not for the making of butter.

I would recommend that the ordinary crops of the farm, even such as clover or grass, should not be depended upon for soiling. The ground should be especially assigned for the purpose. It should be as near the animals as possible, to save labor, and put in the best condition for producing a succession of luxuriant crops. A dry or wet season will then never disappoint the farmer, for if the land is plowed thoroughly and deep, and highly manured, it will be so loose as to permit the roots to strike deep and obtain sufficient moisture, raised by capillary attraction from below, in case of a drought; or so porous as to permit the ready percolation of water in a wet season. All the crops for soiling should come in, in regular order, and not too much ground should be sown or planted at a time; so that the crops may be fed before they are too old and strong. It is often said that these crops are too watery, and that they scour the animals! They do so oftentimes, because the feed is changed suddenly; but after a time they become accustomed to it. Feeding a little dry meal, and giving the animals the privilege of licking clay, will soon check the disorder. Lime water is also very good for that purpose.

I believe that the following plan for raising crops for soiling, would be found to answer the desired object. Let a proportion of land be prepared by deep thorough tillage, and abundance of manure, and sown with rye. Thrice the quantity of seed should be used; and it should be sown about a fortnight earlier than usual. This rule affords the first cutting in the spring. A piece of clover should next be prepared by top-dressing and plaster, this would come after the rye. It could be cut until corn was ready, or as soon as the frost is out of the ground in the spring. Oats and field peas should be sown on rich well prepared ground. This crop will come in after clover, and I think, would be a good substitute for English tares. It was the most abundant crop I have ever raised on my farm. When the weather is sufficiently warm, corn should be sown broadcast. This will give an abundant supply of feed until late in the fall. I prefer sowing corn broadcast to drills. It is much less trouble, and the stalk is made more tender. I prefer too, to cut the corn when it is in full leaf, and not wait any longer. I have conversed with our largest dairy-men, who have partially soiled with corn for several years; they all unite in the opinion, that it is the best feed to give an abundant yield of milk which they use.

KEEPING OF CATTLE.

By Judge Van Wyck.

This question, the keeping of cattle, especially cows, ought to be considered in reference to our whole country; and the first study is economy. The cost of labor always weighs heavily on the farmer; it is an *incubus* on all his operations. In seven years past, the fall of our farmer's prices have been from fifty to an hundred per cent. It requires great economy to make both ends of the year meet. I think grazing is the most profitable business, and it costs not more than half the labor of general farming. A farmer can do much with the labor of himself and family alone. If he hires a proper hand, he must pay him $100 in money, and board him at the cost of another $100. If he has 200 acres of land, and can get it in fit condition as to grasses, &c., he and his family can take care of his forty cattle and cows. Some persons prefer the soiling system, others grazing. I think the latter best, if things are in proper order. Soiling requires rich grasses and the culture of root crops, although a smaller number of acres will suffice. Let a grazing farmer labor to enrich his land; and the dung of the cattle dropped in the grass is not lost by evaporation, part of its value sinks in the soil, and the residue becomes mixed in the grass. In grazing, the cattle have the benefit of pure open air, while in soiling they are necessarily too much confined; and they must, even in this soiling system, be often driven out on the fields for exercise and for water. Grazing fields ought to have good shades for cattle in hot weather, and good water too. The cattle must not be permitted to be made restless by flies or other causes. Quiet is very important to their health and condition.

As to manure, theoretical as well as practical men admit that the best manure is that which is found on the field, from the decomposed grasses which grow there, returning to the soil like for like: and this runs through all nature. In a densely populated country, soiling may be proper, or even necessary. Milch cows should be carefully

kept up in winter; they should be fed in an open yard, which ought to have, on three sides, good covered shelter for them, and they should always have plenty of litter, with a view to comfort and to manure. Our best grazing farmers raise but few cattle, but they buy those from the west, and fatten them for market, usually sell them fat in the months of August and September, and they often double their money (if not more,) in this operation.

ROOTS FOR CATTLE.

By R. T. UNDERHILL, of Croton Point.

It may be useful to repeat, and it is too important not to be thoroughly understood, that the carrot and the sugar beet are particularly adapted to the dry climate of our country. This beet, perfectly cultivated, acquires an enormous size; it is very nutritious, exceeding fattening to cattle, and yields more vegetable matter on an acre, than any other, not excepting the turnep; is preferable to mangel wurzel, but its saccharine is not quite so much concentrated as that in the carrot. I hope that our agriculturists will try them both effectually. A crop of these is absolutely certain, drought or no drought. No insect injures either of them. I have had sugar beets on my farm, which weighed twelve or thirteen pounds each. In France, cattle are fattened on them, (although they have been subjected to the process of extracting the sugar from them,) to an immense extent. Some have failed here from not having the right good seed. This beet is of a yellow color. On a rich damp soil, there has been raised from one acre, one thousand to twelve hundred bushels of them. It is proper to have both carrots and this beet, for the beet not keeping so long as the carrot, must be fed to the cattle first, then use the carrot, which keeps until late in the next spring. It is believed that the carrot may be left in the ground all winter without injury to it; that in this respect it is like the parsnep, keeps as well as that does. These two roots are excellent for soiling purposes.

They must be well separated in cultivation. I plant carrots in rows, one foot apart, and the carrots in the rows four or five inches apart. I plant the sugar beets in rows eighteen inches apart, and the beets in the rows from eight to twelve inches apart. These must, of course, be well weeded and tilled.

The turnep is a very valuable crop. The ruta baga and yellow Aberdeen are best to fatten cattle; sheep feeding on them, lose that

muttony taste so unpleasant, and gain a delicious flavor. The turnep yields a heavier crop than any other vegetable in England. It almost always precedes the wheat crop. The mild winters of England enable sheep to eat them out of the ground. They are placed within a moveable iron fence, upon a patch, and when that is eaten, moved to another: dropping their dung on the patch, they enrich the soil. The following year an extraordinary crop of wheat grows on these fields. I would recommend the sowing of the yellow Aberdeen and Dale's Hybrid in August. The red-top turnep grows large, and must be the first fed to stock, for it will not keep well. In Westchester, last year, we supplied by turneps, half the crop of hay which was lacking.

LIME AND ITS USES.

By R. L. Pell, of Pellham, Ulster county.

Lime is an important and an indispensable requisite in the growth of nearly, if not all cultivated plants and fruit trees; in fact, I have never noticed in any analysis made by analytical chemists recently, of various plants, one in which lime did not form a principal ingredient. It must therefore be considered an essential part of all vegetable substances, as a direct food. By chemists, it has been found that the ashes of the oat plant contain five per cent of lime. In two pounds of wheat, 12 grains have been found. In two pounds of rye more than 13 grains. In two pounds of barley, more than 24 grains; more than 33 grains in a given weight of oat straw; and 46 grains in the same weight of rye straw. It abounds in the wood of trees; the ashes of the oak contain 32 per cent; those of the poplar, 27 per cent; hazel, 8 per cent; mulberry 56, and the hornbeam, 26 per cent. The proportion of lime is found to vary with the composition of the soil on which the plants grow. Thus the ashes of the fir, growing upon a limestone hill, were found to contain 43 per cent, but the ashes of the leaves of another growing upon a granite soil, yielded only 29 per cent. I do not believe a soil can possibly be fit for agricultural purposes if entirely devoid of lime. Its action is to dissolve and render soluble all organic matters contained in the soil, and before such substances are made soluble, they cannot be elaborated by plants. It has probably been observed by all present, that the effects produced by an application of liquid manures to growing plants, was far more rapid than that obtained by any dry applications. When in England, in 1832, I observed that it was the uniform practice among farmers there, to draw upon their field dry manures, and compost liquid manures were not generally used; the liquids were generally absorbed by the straw and dry fodder of their barn yards.

In Switzerland and Germany, I observed an entirely different mode of management; there the farmers who had any reputation as such, were supplied with cisterns, tanks, &c., into which all their straw, litter, droppings from the cattle, and refuse of every kind was daily raked; the tanks were then partially filled with water, and thus a large portion of the manure became liquid. After remaining for four weeks it was carried upon their fields in large hogsheads, on carts drawn by oxen generally, sometimes by horses. On some farms, I was informed that it was customary to clean their cattle and horse stalls but twice a week; the litter taken from them was thrown into the cisterns and washed. After all the particles of manure were removed, the straw was taken out and placed in a square pile to rot. The liquid was then immediately drawn upon their grass fields, and gardens. The results thus obtained were marvellous. I mention these facts to show that lime would be valuable, even if it did not form a part of nearly all cultivated plants; inasmuch as it renders dry substances soluble. Lime attracts moisture from the atmosphere; and thus it is of great importance to land during a drought. I tested its value in that respect, several years ago. In the month of July, I placed around several thousand apple trees, a peck of lime to each tree, and left it piled about the trunk until the month of November, during which time the drought was excessive, so much so, indeed, that the trees not limed turned yellow and lost their leaves very early in the fall; the fruit dropped from them prematurely ripe; whereas those that were limed remained perfectly green, until late in the fall, and the fruit borne by them was magnificent. At any time during the excessive heat in August of that year, a person might moisten his hands by placing them, for an instant under the small heaps of lime surrounding the trees.

Professor Schubler, of Germany, found that 1000 parts of lime, dried in a temperature of 212 deg., gained by exposure for three hours to air saturated with moisture, at a temperature of 60 deg., 11 parts; in 12 hours 26 parts; in 24 hours 31 parts; in 48 hours 35 parts; when it appeared to have become saturated with moisture; for in 72 hours it had not again increased in weight. The nature of lime was first demonstrated by Davy, in 1807; he showed that, like the other alkalies, it was a metallic oxide. The metallic base of lime he termed calcium; its equivalent is so, and lime being a compound of one atom of calcium and one of oxygen, is represented by the equivalent number 28; and hydrate of lime by 28 lime +9 water = 37. The salts of lime are obtained by dissolving carbonate of lime in the respective acids; several of them exist native. Sul-

phate of lime, selenite, or gypsum is an abundant natural product, and may be formed artificially, by adding sulphuric acid to the solutions of the salts of lime.

Farmers should be very particular in the selection of their lime for agricultural purposes. I speak from experience in this matter; having sown within the last seven years, more than 10,000 bushels, 3,000 of which were stone lime, and the balance oyster shell. The stone lime was obtained on the banks of the Hudson, and contained, as most limes do, a large per centage of magnesia. By its use, I am convinced my land was injured, and it may require several years to recover from the bad effects produced; the fact is, all lands require magnesia in minute quantities to grow the usually cultivated grains; and all lands contain a sufficient quantity for agricultural purposes; therefore, by adding lime containing a large per centage of this substance you add a mineral not required, and consequently, take up the space that should be occupied by some more useful ingredient. I would not condemn all the stone lime found on the banks of the Hudson, as I have examined but few of them; those few however, have all been strongly impregnated with magnesia. Statuary marble is the only perfectly pure carbonate of lime, or rather if not perfectly pure, more nearly so than any other stone lime. In examining lime stones, place them in strong acid, and if they do not effervesce very rapidly, and yet are so hard as to enable you to mark glass with small pointed pieces, you may be assured they contain flint earth, and possibly clay. If the lime is not sufficiently hard to scratch glass, and on effervescing with acids the action is very slow, and the solution resembles cream, you may make up your mind that it contains magnesia. When the lime stone appears brown or yellowish red, it contains iron.

The chemical effect of burning stone lime is, that the water and carbonic acid gas are driven off, which amounts to about 35 per cent. After having been exposed to the atmosphere on your farms for a certain length of time, the carbonic acid of the air is again absorbed by the lime, which reduces it to the state of chalk, or carbonate; if taken up by plants before it becomes a carbonate, the charcoal and oxygen abounding in all plants, immediately converts it into one. Caustic lime applied to your soil, reduces hard vegetable matter into a state easy of decomposition. When the lime takes the chalk form, it furnishes matter requisite to supply the inorganic structure to plants which grow in its vicinity. You may always lime land advantageously which abounds in hard, dry, undecomposed

roots, sods, muck, or dry fibres, and use upon such, caustic lime. As all soils are benefitted by mild lime, you can scarcely ever go amiss in its application upon any species of land, as every crop you grow upon it requires, and will rapidly lessen the quantity of lime in the soil. Nitrate of lime is produced in the soil by lime, as it decomposes the earth, rendering it sufficiently soluble to enter the roots of plants. Alkalies and earths can never enter the plants in a pure state, as before stated. Four years since, I manured a fifteen acre lot with oyster shell lime, using 300 bushels to the acre, on a sandy loam that would not grow any thing more valuable than a well known pernicious weed, called St. Johnswort. That year the wheat that grew upon it, weighed 64 pounds to the bushel. I seeded the lot with one bushel of clover seed, and half a bushel of timothy seed to the acre; and the first year after, cut two and a half tons of hay; and the second year three tons per acre. To a heavy tenacious clay, I would not hesitate to use 600 bushels per acre. The chemical action of the lime on such land, is to render it friable, easily worked, less liable to injury by the powerful rays of the summer sun, permeable to atmospheric influences, and easily acted upon by showers. It deprives all injurious insects in the soil, of life, decomposes them, and enriches the soil with their remains.

I was informed in Edinburgh, Scotland, by a highly educated gentleman, that many farmers in his neighborhood were accustomed to use from 500 to 1,000 bushels of slaked lime per acre; he further said that there were farmers owning peat moss farms in the north of England, and likewise in parts of Ireland, who had used eleven and twelve hundred bushels per acre. They occasionally used, with very good effect, salt with their lime. I saw a farmer living on the domain of the Duke of Buccleugh, near the borders of England, sowing lime, in which he said he had put about six bushels of salt per acre; he was sowing at the rate of 400 bushels. The year previous, by the application of lime and salt, he had produced $3\frac{3}{4}$ tons of hay to the acre, when the contiguous lot had only yielded two tons. (For the last five years, I have always used a small quantity of salt in all my compositions for grain, grass, and root crops, taking the idea from the Scotch farmer. I invariably soak my cereal grains in a strong salt brine before planting, and have on two occasions used scalding hot brine upon wheat, with great success. The effect was, to swell the grain to a size that it could not attain in the earth under ordinary circumstances, in three weeks. The aquapine was in many cases plainly discernable.)

In potato culture, lime I believe to be a sovereign remedy if properly applied, against the evil effects of insects, which cause, as I believe, the rot now so prevalent throughout the world; the tops of potatoes contain a very large per centage of lime, consequently it is indispensable to its growth. Place lime upon a heap of potatoes the majority of which are half decayed, and you will find decay in the balance will immediately cease.

I have sown lime at the rate of 200 bushels per acre, upon half of a ten acre field of wheat, and left the balance unlimed. The consequence was, the unlimed was *entirely* destroyed by weevil and rust, when the limed portion produced fifty bushels to the acre of wheat, weighing 64½ pounds to the bushel. I have seen the same effect produced in oat, rye, corn, potato, and buckwheat fields.

When you find a field does not produce a crop equal to your anticipations, in nine cases out of ten, an application of 200 bushels of oyster shell lime to the acre, at a cost of $12, will produce capital crops for six years afterwards; at the expiration of which time, if the ground is not plowed deep during the interim, you will find at the depth of 11 or 12 inches a complete level floor of lime, which gradually finds its way to the subsoil, where it forms a level surface and remains until brought up by deep plowing; it will then benefit your soil for another term of years, in the form of chalk, its action as caustic lime then being a solvent, having ceased.

Abroad, chalk is more used for agricultural purposes, than any other lime stone species; it is composed of flint, clay, oxide of iron, carbonate of lime and water. Lime is therefore one-half more profitable as a manure than chalk; for the reason that it dissolves hard substances, and fits them for the food of plants, before it again absorbs carbonic acid gas in sufficient quantity to become as chalk. There is one question I have to ask of the learned men, which is this, how do plants take up in their system carbonate of lime, which is known to be an insoluble substance, and yet in all plants and vegetables carbonate of lime is found to exist. It can only be, I think, by attracting a large volume of carbonic acid from the atmosphere, which becomes a bi-carbonate, and in this state is alone soluble and capable of being taken up by plants.

I have been informed by a scientific agriculturist, Mr. Wilkins, who has an extensive rice plantation in South Carolina, that a portion of his plantation was considered by his manager, as unfit for rice cultivation, or in fact any other. He advised that it should be

thrown out, rather than lose the time requisite to reclaim it. Mr. W. thought otherwise, and determined to lime it, although the land was exceedingly wet. Mr. W. ordered the lime to be carried on in baskets. It was spread over the field and hoed in, the rice was then sown and cultivated in the usual manner. The result was fifty-six bushels of rice per acre, a larger yield than was usually obtained on any other part of the domain. That piece of land contained all the chemical requisites, eleven in number, except lime; the consequence was no crop could be grown upon it, and it was considered barren; whereas, by the application of perhaps $2 worth of lime per acre, it was rendered highly fertile, and capable of yielding a fine crop of rice; proving what I have repeatedly asserted, that if one of the eleven chemical substances contained in all cultivated crops, be entirely absent from a soil, that soil is incapable of producing those crops, and to all intents and purposes is a barren soil.

Thousands of acres of choice land are now deserted in the Southern States, and hundreds in our own State, which might probably by the application of lime alone, be made to yield 50 bushels of wheat to the acre. I mention lime particularly, because it is used by all plants in larger quantities than either of the other chemical ingredients, and consequently the soil is deprived first of it.

Sulphate of lime is another most important manure, and especially beneficial to grass crops, for the reason that it adds to the soil one of the indispensable eleven, viz: sulphuric acid, which is just as necessary to the growth of plants as lime, and without which no crop can possibly grow. It consists of

Sulphuric acid,----------	32	parts in 100
Lime,----------	30	do
Water, ----------	33	do

Liebig says, that 100 pounds of gypsum, or sulphate of lime, give as much ammonia to the soil as 6,250 pounds of horse urine would yield to it; four pounds of gypsum, he affirms, increase the produce of the meadow 100 pounds. The decomposition of gypsum is very slow, and consequently its action lasts many years in the soil. Although sulphuric acid is required by nearly all plants, still it is only required in small quantities; therefore, when a man spreads a quantity of plaster over his fields, the effects last for several years. I have frequently heard farmers say, that they did not consider plaster of any service, except the first year, when the results were great, that they had continued to put it on in quantities, year after year.

without perceiving any superiority in growth over the first year, and that they had determined not to use any more of it. Now, the fact is, if they used 500 pounds to the acre, a sufficient quantity of sulphuric acid was added to the soil, to last any crop you could put on the land for four years, and consequently any additional quantity was superfluous and perhaps hurtful.

If you cannot readily obtain plaster, no better substitute can be found than anthracite coal ashes; they contain ten per cent of sulphate of lime, ten per cent of lime and sand, together with oxide of iron, alumina, azote, silica, magnesia, oxide of manganese, sulphuret of iron, and alkaline salts. Sixty bushels of coal ashes per acre would be equal to six bushels of plaster, (as far as sulphuric acid is concerned), for grasses. I can assure you there is no manure that I have tried, the effects of which are more immediate and certain than coal ashes on certain soils. Last summer I experimented with it upon clover and timothy grass, and likewise upon trees, with great success, and recommend its use to all.

The proper plan for young farmers would be, when they purchase a farm, to become acquainted with the properties of the soil by analysis. They should understand analysis themselves, to some degree, if not, for $20 they may have their soils analysed, instead of proceeding in the dark, wasting manure, seed and time, they will know precisely the substance deficient, and by applying it, will frequently produce great results at a small cost.

Next to lime, the substance most probably absent in all cultivated soils, will be bone earth. By all the analysis recently made, bone earth and potash are found in less quantities than any other substance, except perhaps lime. They are both indispensable to all crops; I would therefore advise the frequent use of bone dust, lime and ashes, upon all soils that have been long under cultivation.

It is the want of these three substances, particularly, that has rendered the soils of all our old States once so fertile, and almost inexhaustible in the estimation of the first settlers, now barren wastes. The old countries, too, may be held up as examples; the island of Sicily once the granary of Southern Europe, now imports its breadstuffs; the soil of Italy, in the neighborhood of Rome, once affording food for hundreds of thousands, is now sterile. Such will be the case in the whole of Europe as well as in this country, if the present system of arranging drains in all the large cities, to carry millions of dollars worth of the most fertilizing and enriching manures into the

ocean, is not stopped. If we take from our soils annually, all its productions, and return nothing to it, exhaustion will of course be the consequence.

If you find your soil contains, on washing, any acid matter, or that it produces sorrel in abundance, which indicates acid, an application of caustic lime will be very beneficial, as it will immdeiately combine with the acid and neutralize it, and thus at once remove it; although at first it will probably injure the grass, or the crops you may have on the soil, still the benefit will be very great. Sometimes the soil may contain copperas, which will render it unfit for agricultural productions, although it may contain all the requisites of growth; if such is found to be the case, an application of caustic lime will decompose the sulphate, and render the land fit for tillage.

If you find, on the other hand, that your land contains an excess of lime, you may if it be a clay soil, overcome the lime by an application of sand; and if it be a sandy soil, an application of clay will have the desired effect. If the sandy soil is excessively light, and is carried about by the force of the wind, which not unfrequently is the case, peat or muck might be applied, with immense advantage; it would consolidate the soil, prevent the ill effects of the wind, render it at once fertile, and if the muck should be applied in sufficient quantity, permanently so.

If your soil contains too small a quantity of vegetable substance to grow good crops, it may with all ease be supplied by the usual manures; if too large a quantity, the excess may be removed thus: plow the land north and south for instance, then east and west, by so doing you will cut the sods into squares, they must be drawn into heaps and burnt; the vegetable matter contained in them is left calcined with the earth in the form of ashes, in which shape it must be spread over the field; inorganic and saline matters will be by it yielded to the seeds afterwards sown; an application of lime plowed under, will exterminate by decomposition the roots of weeds, wild grass, &c., not reached by the plow, and the whole field will become remarkably fertile, and capable of yielding any vegetable production.

I had a field of this description on my farm, which for several years was a perfect eye sore to me, it abounded with superflous water, was covered by a rank growth of wild grass and bogs, stones and roots were abundant. It was supposed by all who saw it, that the field could not be reclaimed. I determined to drain it, and for that purpose, formed an irregular shaped space in the lowest portion of the field, to re-

tain the water, by carting some hundreds of loads of muck from it to a heap hard by; I then commenced ditching from it as the centre to all parts of the field, the stones were made use of for that purpose; and when completed there were under drains, built of stones in the most approved manner, leading to all parts of the land, the field containing about four acres; the advantages were, 1st. The ground was perfectly drained, and yielded the first season after, potatoes, corn, and buckwheat: 2d. A pond was formed 14 feet deep and 600 feet long which is now stocked with trout, perch, carp, and gold fish. 3d. The muck taken out, mixed with oyster shell lime, was worth the entire cost of the improvement, as manure. In the spring I intend to draw upon this field six hundred bushels of unslaked lime in the manner following: I will deposit it in small heaps of five bushels each throughout the field at reasonable distances apart, when the heaps become sufficiently slaked to reduce the lime to powder, it shall be spread equally over the land, and immediately plowed until it becomes thoroughly incorporated with the earth; this field will then produce an abundant crop of any kind of grain that may be sown upon it, and will be permanently fertile, as the humus in such a soil is very abundant. A few years since I placed a quantity of lime on a corner of this same field, which was then cold and wet; I could see no improvement in that portion over any other part of the field, and came to the conclusion that generally speaking, lime was of no service on a wet soil; still Mr. Wilkins was eminently successful on such a soil, obtaining 56 bushels of rice per acre, where rice never grew before; circumstances and climate, might have had some effect. Lime is apt to liberate gases, and other volatile substances contained in a soil, therefore it would not be advisable to pursue a course of liming for many years in succession, as you might destroy a good soil by so doing. On ordinary tillable land, an application of three hundred bushels per acre, would be sufficient to last 20 years. I have heard farmers on the Hudson remark, that lime was valueless for agricultural purposes, and injurious to their farms; the reason was, that the calcined magnesia of the lime stone remained for a long period of time after its application, in a caustic state, unfit to absorb carbonic acid gas from the air, and in this state nothing can possibly be more disadvantageous to all growing vegetables and plants. After remaining a long time in the soil, it finally absorbs the carbonic acid gas of the atmosphere, when it becomes carbonate of magnesia, and in this form is particularly valuable as forming a part of plants; all very fertile soils contain it.

You will find a composition consisting of one part salt, and two lime, for almost every crop, a capital manure. I have used it successfully upon wheat, rye, oats, potatoes and various other crops. Where salt is used you will find no grubs or other injurious insects; weeds will be killed by it. I have destroyed Canada thistles by cutting them down in August, and applying lime and salt to the tops of the principal stems. You may apply to some soils, in inland situations, 20 bushels of salt to the acre with marked success In England the farmers using lime and salt together, usually after it is mixed, let it lay in a heap for two or three months, covered with straw or sods, before they use it; in order that by slow decomposition, muriate of lime and soda may be formed together with alkali; the muriate of lime is one of the most absorbing substances known; before this decomposition takes place, it would not be well to use the combination, as it may be hurtful. I have used salt and soot; salt and Jersey blue sand; salt and muck; and salt with pond mud to great advantage on the cereal grains. And I have injured apricots, apples, cherries, plums and peaches by the use of salt around their roots in too large quantities. Place a bushel of salt around a good sized cherry tree, and the following year the fruit will all taste salt.

Shells unburnt I think make an excellent manure, for the reason that they contain carbonate of lime, phosphate of lime and animal matter, together with soluble gelatine and aluminous, membranous or cartilaginous residue, much of which is of course destroyed by burning; they should be placed upon a stone floor and crushed by means of an iron or granite garden roller, and when they become a palpable powder, the dust should be sown in the drills with the seed. I have used it to great advantage in carrot and beet culture, for the reason that it was sown with the seed, consequently all the volatile and valuable earthy matters were immediately decomposed, and being in close contact with the seeds, were readily absorbed by the plants as they grew. The contiguous rows of carrots, and beets, five in number, were manured with oyster shell lime in a mild form, and an equal quantity used; those however sown with the pure oyster shells crushed, produced much the finest roots ; in an equal number of rows of potatoes, I observed the same difference, in favor of the shells unburnt. Any quantity of shells might be obtained in the city of New-York, at a cheap rate. If placed whole in your borders for grapes, they will be of great advantage to them, or in your barn yards under the manure, they will decompose gradually, and enhance the value of the compost.

Mr. Blaikie, in a letter to Sir John Sinclair, dated September 18, 1818, says, " oyster shells pounded or bruised (without having been burned) were first used upon Mr. Coke's farm as a manure in the year 1816. In the summer of that year, the experiment was tried upon a hungry, light, sandy soil, which had been cleaned for turnips. The oyster shell dust or powder, was drilled, in the usual way, upon 27 inch ridges, at the rate of forty bushels per acre, (without any other manure,) was slighly covered with earth, and the turnip seed sown upon it."

" Another part of the same field, quality of land equal, was manured with farm yard dung, at the rate of eight tons per acre, put into the same sized ridges, and sown with turnip seed as before described, no manure having been applied. The turnips proved a good crop on both pieces; nor was there any perceptible difference in the bulk, but the produce was not weighed, therefore no fair conclusion can be formed; the manure used gave nourishment to the turnips, and the lime excited the nutritive substance in the soil, which likewise imparted nourishment to them."

In 1845, I was walking with a gentleman over his farm, and he remarked to me, that a certain field containing about 25 acres, had been manured frequently with stable manure, and to prove what he said he turned up the soil in many places, showing that manure prevailed in large quantities; still, said he, this field does not produce me more than one ton of hay to the acre, and that well mixed with weeds. I asked him when it had been limed, and his answer was, never to his knowledge. I urged him to lime it at the rate of 200 bushels to the acre, which he did, and the result was, the following year a very large burthen of hay, consisting of white clover and timothy. White clover appears to be indigenous to all soils, if the proper manure is present to induce its growth, It is a remarkable and well attested fact, that white clover always comes in the first year after wild lands are cleared in our Western States. No matter how remote they may be from civilization. I am convinced if our western farmers could obtain shell lime, and apply it to their lands, now rich in vegetable humus, they would obtain sixty bushels of wheat per acre where they now raise but thirty, for the reason that they depend upon the decay of their wood for the formation of the necessary humus; which when formed, absorbs over seventy times its weight of ammonia and slowly yields carbonic acid, which is absorbed and decomposed by the leaves of the wheat, and likewise nitrogen, which is mechanically conveyed to the roots. The effect of lime

would be to decompose the matters rapidly, and render them immediately fit for the elaboration of the wheat plant; consequently the growth would be quick, the season short, and the yield doubled.

Its action would be most powerful on the organic matter, which must be in immense masses in an undecomposed state in their rich soils, and upon the obnoxious rooted fibrous plants, weeds, seeds and innumerable insects, all of which would be dissolved and transformed into valuable mould; many of their lands are sour, which evil would likewise be at once corrected. The rich alluvial lands would be made mellow by the fermentation which the lime would produce, and all the inert matter would become nutritive.

The first effect of caustic lime is to decompose all animal matter and vegetable substances, accelerating their power to afford nutriment to growing plants, and neutralizing all the acids which have combined with the humus. The same effect is produced upon poor soils; the action is so powerful that it at once exhausts the land, and is consequently prejudicial to it in a great degree. It is very injurious to the health of laboring men, who are employed to spread it; they should always work on the windward side of their wagons. The feet of farm horses used to draw it upon the land in a caustic state, should not come in contact with water; if they do, the flesh will corrode, and the animal becomes incurably lame; the dust of the lime should be kept from their bodies by means of summer blankets. If by accident your men or horses become burnt by the lime, wash the part with sour milk, and it will cause the irritation to disperse. After the lime has been spread a week, it will have no effect upon the animals or men working among it, as by that time it will become carbonate of lime.

I have found by careful experiments, that lime in a caustic or slaked condition, has no negative power, having often failed to grow various plants and seeds in pots filled with lime. When well watered, I found they would start, and grow feebly for a few days, and then die.

You may be assured that no two men will find lime equally useful to their different soils; to some it will be permanently beneficial, to others partially so, and to others still, inconceivably detrimental, for the reason that different soils contain different properties, and different limes unlike qualities. You must first ascertain the properties of your land; you will then be enabled to judge whether it requires lime or not, and if it does, investigate the constituent parts of the lime before you use it.

It is deeply to be regretted that chemists have not made their investigations more accurate respecting lime, and its mode of action, so that the agriculturists might be enabled to judge with certainty its power and its action upon certain kinds of soils. Much money that has been uselessly expended, besides infinite labor thrown away, might all have been saved to the farmer, had chemists devoted more time and attention to this all important subject, and the results would not have been, as they generally are now most contradictory; without scientific analysis, not only of the soil, but the lime, we may err greatly in its use, and cannot proceed too cautiously. Bear in mind that lime actually in itself, contributes only in a limited degree to the growth of plants, as it constitutes but a small portion of their bulk, and that its use is mainly to operate upon the soil and its constituents, decomposing animal and vegetable substances, and rendering them sufficiently soluble by the aid of water to furnish food for plants.

I have used lime advantageously on a light sandy soil, in which there was no vegetable substance for it to act upon; it appeared to operate mechanically, by combining all the fine particles of sand together, giving them the consistence of soil, and attracting from the atmosphere moisture, all of which induced a fine growth of grass; thus adding to it vegetable mould, rendering it tenacious, and sufficiently fertile to favor the germination of a succeeding crop. It is a little singular, that if a small portion of a pasture field be limed, the cattle kept in the field will invariably eat the grass growing upon it in preference to other portions; the lime corrects the acidity, and thereby produces rich palatable herbage, which is much enjoyed by stock.

By the General Report of Scotland, it appears that there, "in the best cultivated counties, lime is now most generally laid on finely pulverized land, while under a fallow, or immediately after being sown with turnips. In the latter case, the lime is uniformly mild; in the former, quick-lime is used, as it is considered beneficial in destroying weeds, and as having a powerful effect upon the fly. On some of their lands, the effect of lime is still conspicuous after the lapse of fifty years. But in whatever manner this most powerful stimulant is applied, the soil should never be afterwards exhausted by a succession of grain-bearing crops, a justly exploded practice, which has reduced some naturally fertile tracts to a state of almost irremediable sterilty."

Soils have been known in Scotland, which for a long term of years, could only be made to yield poor crops of oats or rye, notwithstanding the richest dung was spread on them; still no other grains came to maturity; yet, after having been judiciously limed, and properly cultivated, all species of cereals ripened perfectly upon them. The same effect was noticed in England, especially in the counties of Derbyshire, Somersetshire, and Herefordshire. After applying lime upon arable land, I think it should be plowed at least four times, and harrowed as often, in order that the lime may be intimately mixed with the soil; its effect will then be the same as yeast to bread, causing immediate fermentation, and consequently rapid increase of vegetable growth. Another good effect obtained by several plowings is, that the ground is immensely benefitted by being exposed to atmospheric influences, absorbing every time it is turned, large quantities of valuable gases, which in its solid unplowed form, enter it slowly, besides becoming sufficiently pulverized to enable the roots to extend themselves readily for food, which they always take up at the extremities of their spongioles. In the use of lime I am governed by the following rules.

1st. Never to use any stone lime containing magnesia.

2d. Never to use caustic lime upon dry, sandy upland.

3d. Never to use lime of any description upon undrained land.

4th. When applied after seeding, always to put it on in summer, when the weather is dry, in a palpable powder, and plow it under as often and as shallow as possible, mixing it thoroughly with the surface soil.

5th. When caustic, plow it under at once, in order that it may slake in the soil, instead of on the surface, by which many of its valuable properties are lost in the atmosphere.

6th. To place large quantities of caustic lime upon lands overgrown with noxious weeds, coarse useless herbage, wild grass, and obnoxious bogs; all of which it immediately decomposes, and converts into valuable humus, readily soluble in water.

I trust gentlemen, that although I have said much in favor of lime, you will not use it upon your lands without first discovering whether they require lime or not, as lands have been, and may again be materially injured, and I may say, almost destroyed by an injudicious use of caustic lime. Every application reduces the organic

remains in your soils. I met with a farmer in the north of England, who informed me that he had absolutely destroyed an extensive farm by using lime in excessive quantities; his first application being large, produced wonderful results, with which he was so much pleased that he made another still larger, which to his surprise lessened materially the crop. Not attributing the decrease to the lime, but to the season; he made a third, and entirely destroyed the fertility of his farm. *He* considered lime a manure alone, whereas it should be known mainly as a stimulant, and must be used to promote the fertility of a soil permanently. When once applied, it remains in the land until removed by the crops; therefore, when found necessary, make a liberal contribution to the soil, and be satisfied with the results.

THE PROPERTIES OF MANURE.

By R. L. Pell, Pellham, N. Y.

There is not a subject of more vital importance to the country than manure. Without it in some shape, the agriculturist cannot by any possibility succeed in his avocation. It never was intended by the Deity that man should annually take from the soil its productions and make no return. Such has been the case in Virginia. The tobacco grower has successively taken from his fields the tobacco plant, root and branch. Mark the consequence. A curse has pursued him—his fields have ceased to produce—he has become impoverished—and at this moment, vast tracts that have once been fertile are now barren wastes.

If our farmers paid proper attention to their interests, there is scarcely one among us who has not in his immediate vicinity, or on his very farm, almost every requisite to grow the cereal grains, and instead of producing fifteen bushels of wheat to the acre, might obtain sixty. We all have straw, hay, weeds, stalks, &c., which consist of oxygen, hydrogen, carbon, nitrogen, alkaline and earthy salts, all indispensable manures, yet they are all sold from our premises, except the weeds, which are permitted to grow, come to maturity, sow their seeds and go to waste. If you would grow wheat crops on your ground continuously, all that is necessary is to return the straw, if to it you add the ingredients, small in quantity, taken away by the grain, phosphates, &c. Thus you give to the land every chemical ingredient, from potash to chlorine, that the ensuing crop requires, as the straw and grain contain, by analysis, precisely the same chemical ingredients, and like produces like.

Let every farmer accumulate his weeds, straw, refuse stalks, leaves, muck, swamp mud, sand, clay, night soil, charcoal dust, coal ashes, the excrements of his horses, horned cattle, pigs and fowls, not neglecting the liquid manures in his yard, *under cover*, and when decomposed and properly incorporated, he has a capital on which to commence his agricultural operations that will carry him through every difficulty. The liquids are, in nine cases out of ten, allowed

to run over the yard, where it becomes putrid, loses its nitrogen, which passes off in the shape of ammonia, its salts are carried away by rain, and nearly all its valuable properties are evaporated by the atmosphere. Thus the ammonia and alkaline salts, the most valuable portion of the manure, and without which neither plants nor seeds can exist, are lost. It is the want of these substances that causes our lands to produce miserable crops, and sometimes entire sterility is the result.

A farmer should on no account sell his hay or straw, without returning an equivalent in manure; if he does, his crops will decrease, and finally his land will cease to produce. His constant study should be to increase his manure heaps, by every means in his power, and to become acquainted with his soil chemically, which knowledge may soon be acquired. If your soil requires potash, use ashes; soda, lime and magnesia may be purchased—ammonia and hartshorn are the same thing. Nitric, muriatic and sulphuric acids are extensively sold in commerce. Phosphoric acid may likewise be purchased of the apothecary. All these substances are indispensable in a soil, to produce either the cereal grains, cruciferous, or leguminous plants. Buy them, mix them with 300 times their weight of mould, and apply them to your plants; you will be astonished at the result. By this means I was enabled to raise large crops and heavy grains, long before the works of Sprengel, Johnston, Liebig, &c., were published.

Bear one thing in mind: all the manures you use to improve your soils and to become useful to plants as food, cannot be of the least service to them except in a liquid state; that is to say, if you present your growing crops with bones, fish, lime, potash, soda, muck or compost from your stable yards, they are all dissolved by some process of nature, before the plants can absorb them. That is the reason plants grow so much more rapidly when liquid manure is used upon them, than when a dry composition is made use of.

Davy ineffectually tried the finest impalpable powder of dry charcoal upon plants, in hopes they would imbibe it, but it was fruitless. He found that no manure could be taken up by the roots of plants, unless water was present. The early Egyptian philosophers falsely asserted that water was the only food of plants. They probably came to that conclusion by noticing the magic fertilizing properties of the waters of the Nile, when it overflowed its banks.

Veit says: "plants are nourished only by sucking in the nutritious substance, in a fluid or gaseous form, out of the earth or air, by

means of their roots or leaves." Nourishing substances must therefore be soluble in water; and if a substance is thus insoluble, it must first be dissolved by the agency of some other substance, and in its new combination become soluble in water, before it is to be considered as nourishment or manure.

When chemists speak of a rich soil, they mean one which contains a large quantity of humus or organic remains.

Humus, which, according to Liebig, is the decayed fibre of wood, and is characterized by Thaer as "a mould not properly an earth, but a powdery substance, in a greater or less degree found in the soil." The fruitfulness of the soil depends on its proportions, as likewise it is the only thing in the soil that gives nutriment to plants: it is the remains of vegetable and animal putrefaction. If dry, it is *black and powdery;* if moist, it has a *smooth fatty feeling*, and it is different according to the bodies out of which it is formed; but it has certain general peculiarities or properties in which it is essentially alike.

Humus is a form of organic power, a combination of carbon, hydrogen, nitrogen, and oxygen, and also in less quantities of sulphur, phosphorus, and various salts; it gives nourishment to organism: the more life there is, the more humus, the more life.

For examples in agriculture, we may look to the Chinese; they are known to be the best agriculturists in the world, the best and most scientific gardeners, and the best trainers of plants. Our inquiry would naturally be, what manure do they use? Is it the manure from horses? No; they are seldom used by them in agriculture. From stall fed cattle? No; the stall feeding of cattle is unknown to them. Human ordure? Yes; and why? Because man eats all varieties of food. The excrement of man contains every known requisite to the growth of plants.

Professor Liebig says, in respect to the quantity of nitrogen contained in excrements, 100 parts of the urine of a healthy man, are equal to 1300 parts of the fresh dung of a horse, and to 600 parts of that of a cow. Hence it is evident, that it would be of much importance to agriculture, if none of the human urine were lost. The powerful effect of urine as a manure, is well known in Flanders; but human excrements are considered invaluable by the Chinese, who are the oldest agricultural people we know. Indeed, so much value

is attached to their influence by these people, that laws of the State forbid that any of them should be thrown away, and reservoirs are placed in every house, in which they are collected with the greatest care. No other manure is used for their corn fields.

The following estimate I found in Johnson's Farmers' Encyclopædia, showing the waste of invaluable manures in large cities: He says, by carefully conducted experiments, and very accurate guagings, it has been found, that the chief of London sewers convey daily into the Thames, about 115,000 tons of mixed drainage, consisting, on an average computation, of one part of solid and 25 parts absolutely fluid matters. Allowing one part in 30 of this immense mass to be composed of solid substances, then we have the large quantity of more than 3,800 tons of solid manure, daily poured into the Thames from London alone, consisting principally of excrements, soot, and the debris of the London streets, which is chiefly carbonate of lime; thus allowing 20 tons of this manure as a dressing for an acre of ground, there is evidently a quantity of solid manure annually poured into the river, equal to fertilizing more than 50,000 acres of the poorest cultivated land! The quantity of food thus lost to the country by this heedless waste of manure, is enormous, for only allowing one crop of wheat to be raised on these 50,000 acres, that would be equal to the maintenance of 150,000 persons. London is only one instance of this thoughtless waste of agricultural riches of the soil of England. How is it in our own country, and even in our own city? Are not the corporation of New-York now constructing sewers through all the principal streets, leading directly to the Hudson, with a view of carrying to that great receptacle substances that might, if saved for agricultural purposes, help to support thousands?

The fertilizing liquid produced annually by our population of 400,000, would amply manure 60,000 acres of worn out land, and make it yield to the amount of $4,000,000, to say nothing about anthracite coal ashes, soot, charcoal dust, and the plaster taken from the walls of houses that are daily pulled down, which latter is a valuable manure. I am informed that the Chinese will take down an old wall and replace it with a new one, to obtain the old one as manure. All these substances, and many others, that are daily wasted in our cities, might be saved. In different parts of Europe, there is a substance now in use to disinfect filth, and the product is called animal black; it renders inodorous any substance to which it may be applied. There is now in this city an agent from some European company, about arranging to disinfect cispools, and render the contents portable and inoffensive. If such an arrangement can be made,

our citizens will enjoy a much purer atmosphere than they do at present, and increased health will be the consequence. When travelling in Switzerland and Germany, I uniformly found all the best farmers had large reservoirs under their barns, into which they daily swept all the excrements of their cattle, which are always fed in stalls. They then poured into them six times the bulk of the manure in water; five reservoirs are employed by the wealthy farmers, each large enough to contain all the manure made in a week; they are each allowed to remain four weeks after being filled, to ripen, by which time the whole becomes a uniform liquid mass; it is then pumped into large vessels, carried upon carts drawn by three pair of oxen, to the field, and distributed in a form capable of being taken up at once by the plant.

A German agriculturist at Frankfort, informed me that all German farmers had admitted from time immemorial, that blood of cattle and human urine were the most powerful of all the fertilizers known, and that, if no other substance was used upon land, it would always produce wonderful results, as they contained, (as has since been proved by analysis,) every ingredient requisite to produce growth in all plants. It is usual in Germany to plow it under immediately, to prevent waste by evaporation; before doing so, they frequently add five bushels of salt to the acre, which they find productive of favorable results.

Professor Shubler, of Germany, tried the following experiment: he found a piece of soil without manure, yielded three times the quantity of seed sown, and five times the quantity of seed sown when dressed with old herbage, grass, leaves, &c.

7 times when dressed with cow dung,
9 " " " " pigeon's dung,
10 " " " " horse dung,
12 " " " " human urine,
12 " " " " sheep dung,
14 " " " " human manure and urine or bullock's blood.

Thus you see, that of seven fertilizers, the liquid manures, urine and blood, were found to be decidedly the most efficacious. Human urine, in a fresh state, was found by Berzelius to contain the following substances:

Water,
Urea,
Sulphate of potassa,
Sulphate of soda,
Common salt,
Phosphate of soda,
Phosphate of ammonia,
Muriate of ammonia,
Lactate or acetate of ammonia,
Lactic or acetic acid,
Animal matter, soluble in alcohol,
Inseparable urea,
Earthy phosphate, (earth of bones,) with fluate of lime,
Uric acid,
Mucus of the bladder,
Silica, (earth of flint.)

ON THE IMPROVEMENT OF SOILS.

By Dr. Henry A. Field.

The attention of this club has been called, at several of its last meetings, to the subject of the improvement of soils. The importance of this subject requires no particular enforcement, for I think it will be generally acknowledged, that while there are thousands of acres of land lying in a state of neglected waste, and thousands of acres more which have been exhausted by injudicious tillage, there is scarcely to be found a spot of ground which has been brought to its highest powers of productiveness, by tillage and manure. During the discussions which have taken place at the former meetings of the club, the value and preparation of manures have been ably considered; almost every substance, whether of an animal, vegetable or mineral nature, has been mentioned and recommended, besides a variety of composts which have proved beneficial on our neighboring farms and elsewhere. As, however, but little has been said about the preparation of the soil, by such a course of tillage that is absolutely necessary to the proper use and subsequent benefits of manure, I shall, upon this occasion, call your attention to this important auxiliary to manures in the improvement of soils.

The conditions of unproductive lands are so variable that it is almost impossible to describe them; they may be stony, covered with weeds or bushes, cold, stiff and wet, or dry and arid. They may have a superficial soil, under which is a subsoil, either almost as hard as iron, or of such consistence as to prevent the percolation of water, or the free extension of roots. No land should be attempted to be improved, unless all its conditions are first ascertained, for by such neglect, all the labor and manure may be a dead loss, discouraging the operator from future effort, and deterring others who have been observers, from pursuing such a course as would be highly to their advantage.

We will suppose, for the sake of illustration, a farm to consist of five fields. No. one was covered with stones; No. two overgrown with bushes and weeds; No. three cold and wet; No. four arid and dry; No. five exhausted of the elements of fertility by severe cropping.

We would recommend the following plans for the improvement of each of these fields.

No. one should have the surface stones removed and converted into walls, buildings, drains, &c. I have seen a farm where thousands of dollars worth of good land was in this manner reclaimed, and subsequently cultivated, while the stone used as above recommended, added much to the value of the farm, by repairing dilapidated fences. Where the stones could not be hauled by oxen they were pitted.

No. two; such lands as these are generally wet, if so, they should be thoroughly drained first, then the bushes should be cut off and a strong plow used several times in the course of the season, by which means the land is brought in a good state of tilth, and the roots are mostly dragged out and destroyed. This land should be well limed and manured, and a crop put in the same fall. Mr. Gouverneur Morris has by a plan somewhat similar to this, brought the most valueless lands into an immediate state of fertility. The improvement of such lands as these I consider of the first importance, not only to the owner, but also to his surrounding neighbors, for they generally harbor noxous reptiles and insects; are the nursery of weeds, and frequently cause a whole surrounding country to be unhealthy.

No. three; *lands cold and wet;* we would advise all such lands to be immediately and thoroughly drained. The mode and extent of draining of course depends upon circumstances. There may be an obstructed water course running over a farm, which will during a wet season, completely saturate the surrounding soil; now in a case of this kind it may be only necessary to remove the obstruction, and the difficulty is at once remedied.

Upon my own farm several acres of potatoes were in this manner destroyed during a wet season, but the land has been made productive of good crops of grain and grass since, by merely deepening a neglected ditch. The cold, wet state may arise also from the existence of springs under the surface; in this case no draining will answer without finding and cutting off the sources. A single drain from a known spring, may be at times sufficient, but if the oozing

comes from an extensive strata, then the whole affected land must be drained, so as to effectually cut off every source. The land may also be cold and wet from the nature of the subsoil. Sometimes there is an impervious hardpan under the soil, at others, one of stiff clayey soil, which stagnates the surface water. Besides draining, in this case, the use of the subsoil plow will be highly advantageous. I have used one of Ruggles, Nourse & Masons' subsoil plows, purchased of Mr. A. B. Allen of this city, and cannot speak too highly in praise of its use. The land is first plowed with an ordinary plow, and this follows in the same furrow, breaking up the subsoil without bringing it to the surface; other lands may have a substratum of stone under it, which prevents the water from passing off. I have seen acres of land in this condition. Indeed most of the ground in the vicinity of Union Place, in this city, is in this condition, and unless there are regular sewers built along those streets, the cellars are partially filled with water during every heavy rain. I doubt whether such land could ever be improved for general crops economically. After such lands are drained and subsoiled, they are fit for future cultivation and the application of manure.

No. four; *Dry and arid lands* require a treatment directly opposite to the latter. I have endeavored to cultivate a piece of such land as this unsuccessfully, for several years, until I pursued the following plan, which I would most highly recommend to any farmer having a dry side hill, with a light soil, and so exposed to the rays of the sun as that the growing crops would be burned and dried up by them, especially in a dry hot season. I commenced by the application of plastic clayey muck, which was deposited in the latter part of summer, and spread and plowed in in the spring, after which peas were sown broadcast and slightly harrowed in, so as to leave the surface rather rough. The peas grew finely, sheltered the ground, and kept it cool through the hot days of summer. In September the vines were plowed in, the rye was sown, and the land seeded down with timothy. The rye looked last fall very fine, the timothy was showing itself, and when we shall have sown the clover seed next spring, and thus finish the operation, I believe it will be the most satisfactory improvement we have ever made on our farm. I would suggest here, that if muck is employed as an amendment to light sandy or gravelly soils, it should not be used unless it is of thick clayey consistence, and it should never be mixed with lime, which always, according to my experience, makes it light and friable, and consequently destroys its properties as an amendment. If muck cannot be easily obtained, clay should be brought to the surface if possible, or if it cannot be

raised economically, then head land, or any stiff soil should be applied. In my opinion, light sandy soils can never be so advantageously cultivated, as when their properties are so altered by amendments, as to enable them to retain the manures applied, and the particles of soil brought in such a state of proximity as to properly fix the plants, and enable the roots to perform their functions.

No. five; *fields exhausted by severe cropping.* The soil must be considered in a two-fold light, in reference to its importance to growing plants. First, as fixing them, and secondly, furnishing them their daily food. The fact is, the soil is a great store house of vegetable food, the quantity of which, however, varies in different localities; sometimes it is so abundant that the yearly crops which feed from it, do not exhaust it, but in other locations the quantity is so small, that a few years is sufficient to exhaust so many of its composing elements, as to make it incapable of producing similar crops for ever afterwards, without those constituents or their substitutes are again added. To ascertain exactly what has been lost, the best plan undoubtedly would be to apply to the analytic chemist; he could tell in what manner such soil differed from the most highly productive soil. But yet I cannot say I place so much importance upon this mode of investigation as some have done, at least as it has generally been proposed or employed, for as it has been before intimated, the circumstances, condition and constituents of the soil may differ so materially on the farm, or in the various fields, or even in the same fields, that a single examination of the soil of a farm, or even three or four analyses, would not amount to much; and then again, if the exact composition of the soil were known, and the remedy for its improvement proposed, it is far from being certain that the condition of the soil at the time would admit of its use with any prospect of success. Suppose, for instance, a specimen of soil were examined, and found to be wanting in azotized matters, and poudrette or guano were recommended as containing an abundance of such elements; now if the land were dry and arid, such stimulating manures would assist the scorching sun to destroy your crop in a very dry season; or if the ground were cold and wet, all the expense of the manure and its application would be lost in a very wet season. Again, to take a more abstruse view of this subject, the value of the application of such substances as chemistry would suggest, depends very much upon the exact constituents of the soil at the time of the application.

The soil is a great chemical laboratory, where unknown numbers of chemical changes are constantly taking place, changes necessary to the growth and perfection of plants. Chemical changes, however, cannot take place without the elements to be acted upon, whatever may be their affinity for each other, are in a favorable condition for such changes; and to this fact I think can be attributed many failures of experiments which have been undertaken with the expectation of different results. We need practical analytic chemists, *who are also practical farmers.* I hope to see the time yet when we will have physicians for the soil as we have physicians for the body, whose duty it shall be to take farms under their special care, examine and analyze the soil, ascertain its composition and condition, and direct such tillage and manures as shall render those that are useless or exhausted valuable and productive.

Allow me to conclude this imperfect paper by suggesting that until we are so highly favored as to have such important aids as practical agricultural chemists, that we should be closer observers ourselves in cultivating the soil, and to institute such experiments as shall enable us to satisfy ourselves of the importance of any effort for the improvement of our soils, before we involve ourselves in unnecessary expenses, and mortify ourselves by failures in our undertakings.

RESUSCITATION OF WORN OUT LANDS.

By Thomas Wharton.

To comply with a promise made, I give a slight sketch of my success in using manures, raising corn, grain and clover on lands that were completely exhausted of every productive quality, having been regularly skinned for upwards of 40 years, and reduced comparatively to a barren sand bed, only producing five-fingered grass and mullens. I commenced operations by deep plowing, and turning up a perfectly new surface of yellow sandy loam, which my neighbors assured me would yield no returns for my labor; I then procured a quantity of crushed bones and dry wood ashes; these by properly mixing and fermenting, by sprinkling water on every layer of ashes, soon caused the desired heat; and to avoid escape of the ammonia, used a few bushels of gypsum. Thus prepared, I harrow my land perfectly smooth, then with a marker of four teeth, set at the distance of three feet three inches, I mark the rows, crossing in perfectly straight lines and at right angles, then plant at each intersection four or five kernels of corn previously steeped 12 hours in a solution of nitre in chamber-ley and dried with plaster, followed by a handful of the prepared bones spread thinly over and around the hills, finishing by drawing mould over and covering the seeds about two inches deep. As soon as the corn is well up, run the cultivator through, a turn to each row. A man and steady horse will do 5 acres per day. In a week or ten days the cultivator is run through crosswise, and should any weeds escape, which may occur if the operator is not very careful, let the hoe follow, and by the time the hoeing is finished and the weather dry, let the cultivator take another turn and a second crossing before the corn is in the tassel. This last operation will leave the land light and free from weeds as a garden; and my produce was from 60 to 80 bushels of ears, with a growth of stalks averaging 10 to 12 feet in height, (last year, 12 to 14 feet, see New Haven report,) in a season when my neighbors were nearly burnt

up. In October, cut up the corn smooth, and in the early spring plowed and seeded part with oats, and part barley and clover seed, sowing soon as the oats, &c., were up, about two bushels of gypsum per acre; both crops good, and the clover uncommonly well set. You will observe the above process leaves the land perfectly level, and so far from the want of hills exposing corn to be blown down by high winds, I have for 14 years, observed that my flat culture stood the wind much better than my neighbors on the hilling system, and at the same time retained more moisture. From 30 years experience, I can fully recommend bones as a highly valuable manure for light loamy lands, perhaps superior to poudrette, as their effects will be felt at least 5 to 10 years. Had I the choice of manures, I should use at planting, 25 bushels of bones, and at second cultivation or hoeing, about half a gill of poudrette.

Wishing you every success in your laudable undertaking to better the agricultural interest, and for the welfare of each individual member of your valuable society, believe me gentlemen, your friend and well wisher.

IMPROVEMENT OF WORN OUT SOILS.

The following statement in reference to the improvement of worn out soils, has been communicated by a gentleman engaged in agricultural pursuits in Vermont. He says:

"As I have had a little experience in the way of improving worn out soils, (for we have some farms even here in Vermont, that are well nigh worn out,) I beg leave to make a few suggestions based upon facts.

"In this district or section of country, we have a great variety of soil. We have dry sandy soil that is very easily tilled, and is best for corn and rye. I have known some fields to be planted for ten years in succession, and improve all the while, from the application of a small quantity of lime, plaster and wood ashes to the hill, either before or after weeding. This kind of soil will not retain manure more than two years, and the best way is to apply a little every season. We finally found great difficulty in getting grass seed to take root, on account of the soil becoming very dry; we find that by sow-

ing in the spring from 10 to 12 bushels of wood ashes per acre, there is but little risk of a failure. Clover is the only grass grown to any profit on fine soils here.

Muck and coarse manure lasts longer than fine in any soil. I find great advantage from spreading my straw upon dry lands; the grass and small grain is much improved by it. Muck is of little value on wet land, straw and hot manures do the best. Muck is as well fitted for use by exposure to the sun and frost as by any other process; unslacked lime will warm and make it sooner fit for use, but no better when on than if put on separate. Some soils contain already too much lime. Traveling a few years since in Michigan, I noticed that their best wheat lands where there was lime in the soil, the base being sand and clay, cracked badly, and became so hard that it was difficult to plow at all, and in many instances to destroy the grass roots. This does not exactly accord with Mr. Watson's theory, that 300 bushels of lime per acre should be added to land that cracks under heat.

"I find that all made or alluvial soils, after becoming somewhat exhausted on the surface, are much improved by being turned up much deeper, not by using a subsoil plow, but with a large heavy one, that will bring the bottom up and turn the top under. The cheapest method of raising our interval lands, we find, is to plow in a crop or two of clover. Always allow a good part of the seed to ripen before plowing; nothing better for land that is intended for seeding down to grass, than to have it well filled with clover seed.

"Clover, on rich lands, should be sown very thick; the stalks will be small, and the quality greatly improved. On poor lands we can hardly expect a crop without first furnishing an abundance of seed.

"The roots of clover when the stalk is dead, furnish a manure for other grasses, and help to keep the land light and porous. In 1838, '39, and '40, some of our best farmers thought to improve the quality of their hay by growing the finer grasses, and by so doing very much lessened the value of their farms; attributing it to the want of nutriment derived from the decay of the large roots of clover that run down into the earth, and when green throwing off, as is generally allowed, nutriment imbibed from the atmosphere, while the finer grasses only spread their roots near the surface, and of course the soil below becomes stiff and hard.

"As to the matter of burning the turf of certain soils, no doubt it will prove beneficial, especially if there is a rich subsoil under it. I am of the opinion, however, that our new lands would produce much more and last much longer if the timber could be taken off without being burned on the soil, as the mould upon the surface serves for a manure for several years, and fire, I am confident, injures instead of improving it, or the soil, as a general thing.

"I once felled six acres of heavy timber on the richest portion of my farm, and at a proper season set fire to it, and as we generally term it, got a first rate burn, and if burning all off clean was a good one, I had it. But you can imagine my surprise, when, after thoroughly fitting out and seeding it, I waited in vain for the harvest, and never got half paid for putting in a crop on the six acres, until I plowed it deep enough to bring up earth that had not been spoiled by heat.

"A friend residing several years in the north part of South America, says: 'Upon the Island of Marajo, the soil is a mixture of clay, sand and lime, and during the wet season, is completely submerged, (meaning the prairies of course,) and in the dry season becomes hard and cracks to a great depth, say 20 or 30 feet deep, spreading on the surface to such a width that animals and men are in danger of getting in.'

"*Quere.* Would burnt lime have any advantage over that existing in the soil? Some agree that it has.

"The grazing land here, says my friend, produces abundantly, and like our western prairies, are burned over once a year in order to furnish pasturage for the cattle."

ON THE USE OF MUCK TO IMPROVE THE SOIL.

Extracts from the remarks of Mr. TAYLOR, *of Saratoga county, made before the Farmers' Club.*

I have experimented with muck, and respectfully dissent from the opinion generally held as to the use of lime, for when it is placed in close contact with barn yard manure, it causes too great an evolution of the ammonia. I have used four thousand loads of muck on my farm; I added one bushel of lime to each load of muck, having

arranged the muck in ridges across the field, and then sprinkled the tops of the ridges with lime; while it is still hot turn over the ridges; the lime must be hot when put on; the whole benefit consists in its dissolving vegetable matter in the muck, which thus soon becomes good manure.

In my field No. 1, a hill covered almost with sand which drifted with the wind, I put on sixty loads of muck, subsoiled the ground, turned the muck under fifteen inches, planted potatoes on the 5th and 7th of April last. I dug the crop early in June. I had a profit of $380 for that crop over all expenses.

I collected all the bones in my vicinity and had them dissolved in sulphuric acid, this I used for turneps, and obtained 1200 bushels. The muck had become mixed with the soil, and apparently formed an argillaceous soil, and prevented the land from blowing.

On field No. 2, I planted Mercer potatoes, and had 263 bushels per acre, which I sold for seven shillings a bushel; this field had the same treatment as the first. On a field of 24 acres, on which I planted corn, and I obtained 63 bushels of shelled corn per acre. The general average crop among my neighbors was about thirty bushels per acre. I had used the following method: I made a compost on my barn floor, of 25 bushels of lime, 25 bushels of plaster, 25 bushels of salt, 50 bushels of hen dung, 150 pounds of nitrate of soda, the same quantity of sulphate of magnesia, the same quantity of sulphate of soda, and mixed the mass thoroughly. I took the urine which was saved in my tanks, wet the mass with it, and turned it over every three days for some time. The evolution of ammonia from this heap was great, so that one could hardly bear the smell in the barn. Of this compost, I scattered moderate quantities in the drills prepared for corn, and after planting the corn, I plowed the earth over the compost and seed. The land thus treated, gave me sixty-one per cent more than that not manured at all; and thirty per cent more than lime used with muck, and lime only. My object was to supply to the soil those fertilizing elements, which by analysis, appear to be indispensable to plants. There is no doubt that it is our duty to afford food to plants as to our animals. My land contains but four per cent of humus. When there is plenty of muck, then give lime. I made a bed of muck one foot thick, then barn yard manure, then muck. The lime decomposes the muck, the gases will be evolved and unite with the other components of the heap, but lime must not be put in contact with the barn yard manure.

On the Cultivation of the Woad Plant, and its manufacture as a substitute for Indigo in dying.

By William Partridge.

The seeds are best sown in the month of March, or early in April, if the season permits; but it requires a deep loamy soil, and is still better with a clay bottom, such as is not subject to become dry too quickly. It must never be flooded, but situated so as to drain its surface, that it may not be poisoned by water stagnating on it. If meadow land can be obtained, it will be doubly productive. A season of warm showers, not too dry or too wet, gives the most regular crop, and produces the best woad.

Land cannot be too rich for woad; yet, when dung is used, the weeds become troublesome, and the hoeing expensive. Some raisers sow it as grain, and harrow it in, and afterwards hoe it as turnips, leaving plants at a distance; others sow it in rows by a drill plow, and some dibble it in, putting three seeds in a hole, and these holes to be from twenty inches to two feet apart. Woad very often fails in its crop from the land not being in condition, or from want of knowing how to destroy the botts, snails, wire-worms, &c. To kill these, strew lime, forty-eight bushels to the acre, and harrow it in, which will destroy them all as soon as the first rain falls.

The leaves of woad on good land and in a good season, grow very large and long, and when ripe, show near their end, a brown circle, when they must be gathered, or they will be injured. Woad is to be gathered from twice to four times in a season.

Woad, when gathered, is carried to a mill and ground.

These mills grind and cut the leaves small, and then they are cast into heaps, where they ferment and gain an adhesive consistence; they are then formed into balls as compact as possible and placed on hurdles, lying in a shed, one over the other, with room for air be-

tween, to dry them to a degree proper for being fermented; but in summer, these balls are apt to crack in drying, and become fly-blown, when maggots will be generated that will eat or destroy all that is useful to the dyer. When they are observed to crack, close them again, and if the maggot has already generated, some fine flour lime strewed over them will destroy them, and be of much service in the fermentation. These balls if properly preserved, will be very heavy; but if worm-eaten, they will be very light, and of but little value. They are then to be replaced on the hurdles and turned, not being suffered to touch each other until a month or more after the whole that is intended for one fermenting couch is gathered in, ground and balled.

The balls when dry, are very hard and compact, and require to be broken with a mallet and put into a heap and watered to a due degree, only sufficient to promote fermentation—too much moisture would retard it. And here is a crisis necessary to be attended to. When the couch has attained its due point, it is opened, spread and turned, until regularly cooled, and then it is considered in condition for sale; but dyers should never use new woad, as its fermentation in the vat is not so regular as old woad.

The grower of woad should erect a long shed in the centre of his land, facing the south, the ground lying on a descent, so as to admit the sun to the back part, and here the woad should be put down as gathered and spread thin at one end, keeping children to turn it towards the other end.

Good woad, such as the richest land produces, if properly prepared, will be of a blackish green, and mouldy; and when small lumps are pulled asunder, the fractures and fibres are brown; and the more stringy they are, and the darker the external appearance, and greener the hue, the better the woad. The fibres only serve to show that it has not suffered by putrefaction.

For the use of the dyer, the balls require a further preparation. They are beaten with wooden mallets on a brick or stone floor, into a gross powder, which is heaped up in the middle of the room to the height of four feet, a space being left to pass around the sides.

The powder moistened with water, ferments, grows hot, and throws out a thick and fœtid fume. It is shovelled backwards and forwards and moistened every day for twelve days; after which, it is stirred

less frequently without watering, and at length made into a heap for the dyer.

The above is the usual mode followed in England, for making woad. In France and Germany, the woad is sold in dry balls from the hurdles, and any subsequent preparation is made by the dyer at his expense. Some fifteen years since, I bought some ten or more tons of such balls, that had been sent from France and Germany, but could not be sold for consumption. I hired a barn in Greenwich, couched them, gained three tons in weight, and sold it at one hundred per cent. advance on the cost of the ball.

I would caution our agriculturists from having anything to do with woad, at least, at the present time; for great changes are going on both in European and American dyeing that, if they ultimately succeed, will put a veto on its consumption. We have lately been selling English woad of prime quality at 50 per cent. less than it could be imported at only four years since. Prussian blues are being substituted for woad and indigo, both in woolen dyeing, and in calicoes; and a substitute for woad is being used in Europe to a considerable extent, which I am not at liberty at present to make known. The cost, however, is not one-twentieth that of woad. I do not believe the blues made with the substitute are anything like as permanent as when woad is use; and it is not improbable that it may be given up, when the consumers become convinced of the fact.

CORN.

The following is an extract of a communication of Mr. Kerr, relative to the cultivation of corn:

In the cultivation of corn, hilling is not a good plan; too much of the rain is carried away from the roots of the plants, and the manure is often exposed to the action of the air, and its efficacy is lost; more space is requisite between the plants. It is now more fashionable to plow the spaces between the plants with the mould-board off, that the coulter of the plow may stir the soil, making good tilth; leaving the soil permeable to moisture, &c. The objections to hilling corn are: 1st, the removal of the roots from the air, and the earth close to the plants is unbroken and covered up. 2d, rain and moist-

ure tend to run off the hill instead of sinking into it. 3d, part of the manure is turned up and exposed, and it applied to the corn in the hill, further removed from the air and moisture by being buried deeper. 4th, more labor and trouble are required in turning up the hills, while the weeds are most likely only to be buried, and soon appear again. 5th, more room is required between the rows, and consequently a less yield per acre.

The advantages in stirring and loosening the earth in place of hilling it about Indian corn, are: 1st, The root is not buried deeper, and the earth all around the plant is in good tilth. 2d, dew, rain and moisture are allowed freely to penetrate the soil and benefit the plant. 3rd, the action of the manure, whether applied broadcast, or laid in with the seed, is hastened, without being directly exposed. 4th, the trouble and labor are less, while the weeds are more liable to be cut and destroyed, as a plow armed with a coulter only, is sufficient to stir and loosen the soil. 5th, a larger yield must follow; and the plants being closer, the stirring of the earth is more easily accomplished, and with more benefit to the crop.

MADDER.

Gen. James Tallmadge, in alluding to the cultivation of this valuable drug in America, says:

It would form a very valuable staple, and keep at home some hundreds of thousands of dollars, and by export, bring many home from foreign nations. Madder and silk are of immense value to us, and we must become producers of them both.

European books give us instructions as to the culture of madder; but I have entirely too much confidence in American genius to believe that we shall ever require the numbers of women, and children, and cattle, and the spading used in the old world, to bring that valuable drug into market. We shall be able by deep ploughing, and by using the subsoil plough, to till our soil to the requisite depth (some twenty inches) and contrive to cultivate it as well and perhaps better than they do in Holland and France. I have witnessed the operations in the madder fields near Avignon in France, and feel assured that we can excel them at it, not by their ways, but by

methods of our own. Alluvial lands, which are best suited to madder, lie in abundance along our rivers. These bottom lands cannot be better employed than in the production of this indispensable dye—once used as a red color only, it is now found to be of very great value in fixing other colors. Chemistry has ascertained its various uses. Berthollet's work on dyeing contains some views of this subject, that show its importance. And let me here quote French testimony as to the present and future prospects of our country in the exportation of cotton goods. The large amount already made here, requiring, more or less, the use of madder, if we mean to rival Europe in the manufacture, (and why not?) we must send them beautifully dyed. Our infant manufacture of cotton prints was a failure, for want of a proper knowledge of the use of madder.

I am unable to obtain a distinct account of the import of madder, for it is duty free, and reported generally among drugs and dyes. But as nearly as I can ascertain, our last years' importation was about one million eight hundred thousand dollars.

The British import of madder in 1839 was about twenty million pounds, in 1841 twenty-seven millions, 1842 twenty millions; British duty two shillings a hundred pounds on ground madder, and sixpence on raw madder. The price varies from 14 cents to 17 cents a pound.

A crop of madder is far more profitable than one of wheat—ten acres of madder is worth 150 of wheat. This root requires weeding, very much as beets do; and while the crop is growing you can take your scythe and mow off the leaves, which make a fodder nearly equal to lucerne. Indeed it must be mowed to give growth to the root.

VALUABLE PEAS.

Dear Sir—I stated to you the other day, that there are or were two valuable varieties of the Pea in the Boston market, that I had not seen in New-York; these are Knight's forty day pea, and the green prolific.

As you requested, I will give a more particular account of them. The seed of the first was sent about twenty years ago, by Mr. Knight, to the late Mr. Lowell, or Mr. John Price of Roxbury, as the product of many trials to obtain a rich and fruitful pea, combining, also,

a quick maturity. As the name indicates, it had filled for the table in forty days.

Eighteen years ago, I got some of this seed from the late Mr. George Murdock, near Faneuil Hall, Boston, with whom it had been left for sale by Mr. Lowell or Mr. Prince.* I sowed four rows of about thirty feet length on the 10th of June. The ground was well prepared and open to the sun from East to Southwest. On the 4th of July, I gathered sufficient for my own large family, and a quantity for a celebration dinner on that day. Some of the first and fairest pods I left for seed. My family was supplied from this patch till early in August; I had besides a large surplus for sale. I pulled up the vines, cleared and prepared the ground well, and sowed in the same ground, the seed I had saved from the first crop. The second crop matured in about thirty days; I continued to gather from it through September. The vines became injured by mildew, and were less fruitful than the first.

The quality of this pea is hardly inferior to the marrowfat. The vines very tall; for the first crop, my sticks were not long enough. In fruitfulness it far excels any other pea I ever saw. The pods are large, well filled and hang in amazing abundance. In both cases, I soaked the seed well, to swelling, in brook water.

The green prolific is a late, low bush pea—the pod flat, and of a deep green, and can or could usually be had in the Boston market till October. It is very rich, opens well, and commands at that season a high price. An early frost injured my crop. My garden was on high land in Worcester county, Mass.

If this account be of no other service, it may induce attempts to prolong the season for this favorite and delicious vegetable, by successive crops and by introducing new varieties.

Respectfully yours,

FRANCIS WHITBY.

T. B. Wakeman, Esq.

PRESERVATION OF PEACH TREES.

The following valuable suggestions, for preserving peach trees from the ravages of insects, are communicated by a practical farmer in New-Jersey:

I think it was about the year 1804 or '5, that the grub began to destroy the peach trees in New-Jersey. My father had at that time thirty or forty acres in fine condition and young trees. They began to fail, and in two or three years were either dead or of no value. We found that in proportion as the worms progressed around the trees, the same were more or less decayed, and such has been my uniform observation ever since. I have failed in raising as many trees as would even supply my family with fruit, until within six or seven years, and of late have only grown enough to test the certainty of my remedy. Of the many trees which I have examined, I may say thousands, with the exception of one, I have found their failure to be from the worm. I do not believe in the yellows as a serious cause of failure in this part of New-Jersey. While I was on a farm, I tried very many plans for saving my trees, but they all failed. My belief is, that an insect, in the course of the summer, deposits its eggs in the body or limbs of the tree, and that before winter the eggs are hatched, and the insects find their way to the bark of the root, about an inch below the surface of the ground. I have found plenty of them singly, or in clusters, in crevices of the bark, in October and November, and often, (if late in the season,) when they have pierced and entered the bark. About that locality, and never above the surface of the ground, or far below, I have tried many experiments, on scores of these worms, to find their bane, and none have answered better than the *corrosive sublimate*. I have prepared it as follows: common tar, two pounds; tallow, two pounds; melt them together, and after they are cooled so much as to hold suspended, add three ounces pulverised corrosive sublimate, and three ounces pulverised common salts of nitre. Stir the preparation from the time it begins to cool, until the powder is thoroughly diffused through the entire mass. Then the earth must be removed from the trees, down to the departure of the roots, and the surface well rubbed with a cloth or brush, and all crevices and defects in the bark, freed from the soil. The preparation must then be applied, a little warmed, but not enough to allow the powder to separate from the mass. Then with an old brush thoroughly cover every part and crevice of the bark with the preparation, from the branching of the roots to about two inches above the ground. Surround this surface with a

single bandage made of old India rubber cloth, oil cloth, or any cheap muslin well painted and dried for use, or any other covering which will certainly prevent the absorption of the corrosive by the wet earth. Then tie a string around the bandage firmly, around the upper end, above the ground, and replace the earth and pack it around the tree as before. In the early part of next April, take off the bandages, cleanse, and save them for use again. You will find the preparation still on the bark. but no grubs alive, and if any are found in newly dressed trees, they will be nothing more than the skins of worms which had gained an entrance before the dressing was applied. No grub can live under this dressing, if applied as is here directed. The corrosive costs about eight shillings per pound, which would be sufficient to protect a large orchard. The whole expense of making the application, will, I think, not exceed two cents a tree.

MODE OF PACKING APPLES FOR SHIPMENT.

We extract the following from a communication made to the Institute, on the subject of preparing apples for shipment:

GENTLEMEN—At your request, I give you my opinion and experience, with the means I have taken to procure good apples, for putting up for shipment to Europe, or for sending on any other voyage. About the autumn of 1836 or '37, I had some thirty or forty barrels of apples to pick. I was then engaged clearing a piece of land in New-Jersey for a farm, part of which was an orchard, which had been set out about twenty years before; this had been neglected, and was all the land that had been tilled, if we except four or five acres more, which had been used as a potato patch. In the orchard, with some other fruit trees, were some Newtown pippin trees, and all in a shocking state of neglect. I set about to clear it up, and render it productive. In March I had the trees scraped with a dull hoe, to which I had a short handle fixed, to make it more handy to scrape off the outside dead bark; after this, having trimmed the boughs and branches, I prepared a quantity of soft soap. With this in a bucket and an old whitewash brush, I sent a man in the orchard to smear all the stems of the fruit trees, and all the other trees which stood by, knowing or thinking the little depredators I wished to be rid of, might lurk under the bark of any tree that stood in the orchard or near it, as well as in the fruit trees. It was a "bearing year" as the farmers call it, and there was a great crop of apples, and I had

very few wormy ones. We picked the apples by hand, and did not pour them from one basket to another without putting soft hay or oat straw between them, while pouring them. We put straw on the floor of the room in which they were stored; there was also straw put on the bottom of each basket, and in the bottom of the cart we carried them in; all this was done to keep them from bruising. After they were housed we sorted them, rejecting all which had defects, and if damp, wiping off the moisture. We next took each apple, and rolled in coarse clean paper, any soft paper will do (the paper I bought was common wrapping paper, straw paper will answer.) The paper had this effect, it keeps the apples from rubbing against each other, and keeps them at a certain degree of moisture, not allowing them to evaporate or receive damp. In the bottom, and around the sides of the barrels a small quantity of straw was placed, and the apples laid in one at a time, and as close to each other as they possibly could be, without jamming. When the barrel was filled, a little more straw was put on the top, and the head of the barrel put in, with an inside lining hoop to prevent the head from being knocked in. There was besides a lining hoop, put in the bottom head of the barrel before packing. The apples when packed in this way were tight in the barrels, and could not be made to rattle by common usage. They were sent to Sheffield in England, and on being unpacked there were found sound to an apple.

Those apples which have a close tight skin will keep the best, for the greatest length of time. Of this kind are the Newtown pippin, Lady-apple, Russet, and the real Rhode Island Greening.

CURING HAY.

Pellham Farm, July 18th, 1846.

I state in as few words as possible, of my process for the benefit of those fond of trying experiments, and desirous of getting in a crop of hay at an expense of five shillings and sixpence per ton.

On Monday morning, the 6th of July last, at half past 4 o'clock, I commenced cutting a thirty acre field of timothy grass, and Saturday evening the 12th at 7 o'clock, the contents of the field, seventy-five tons, was stowed away in my barn for winter consumption, and I can assure you, that it is in as perfect order, as the sample now before you, presenting to the eye the same green appearance, which it

will retain for years if kept from light; with all its saccharine qualities unimpaired.

I employed seven men and one boy, who alternately mowed, spread, loaded the wagon, drew in, stowed away, &c.; immediately after the grass was cut it was spread as thin as possible over the field, and was turned once before noon. At one o'clock it was raked into windrows and cocked; at two o'clock the wagon commenced drawing into the barn, where it was packed, and salted with from half a bushel to one bushel per ton. At evening, all the grass cut before three o'clock was drawn in and stowed, retaining all the nutritious qualities to form flesh, bone, muscle, and to promote growth in the animal to be fed on it, having lost only 14 per cent of water, which was partly replaced by salt. In fact, therefore, my hay is nearly as heavy as it was when standing in the field. The salt draws out the water, which passes off by evaporation, and takes possession of the pores, adding to the weight of the hay, and curing it on the same principle that it does beef or pork.

I am, very respectfully,

Your obedient servant,

R. L. PELL.

MAIZE OR INDIAN CORN.

Compiled by D. J. Browne, under the direction of the American Institute.

INDIAN CORN.—Synonymes.

Zea mays, *of Botanists.*

Maize, Indian corn. *Britain and Anglo-America.*

Mais, Blé d'Indie, Blé de Turquie. *France.*

Maiz, Trigo de Indias. *Spain.*

Grano d'India, Grano Turco, Grano Siciliano, *Italy.*

Maiz, Milho da India, Milho grande. *Portugal and Brazil.*

Mais, Türkischer Korn. *Germany.*

Mays, Turksch Koorn. *Holland.*

Turkish Hvede. *Sweden and Denmark,*

Tureskoichljeb. *Russia.*

Derivations.

The generic name *Zea* is derived from the Greek *zao,* to live, from the nutritive qualities of or some kind of corn formerly cultivated in Greece or on the adjacent Archipelago. The word *mays,* and all its derivatives, according to Clavigero, have been derived from the denomination of this vegetable in the Haitina language, or that of Hispaniola; but by others, it is thought to come from the Lettish and Livonic *mayse,* which signifies bread in those languages. The European names *Blé d'Indie, Trigo de Indias,* etc., have been so called on account of this grain having first been brought by Columbus from America, which was known at that time by the name of the "Indies;" and those names signifying "Turkish

corn," took their origin from the circumstance that the cultivation of this plant spread from Turkey to the neighboring countries, and consequently led some writers to believe that it first came from the East.

Description.

The fruitful maize, in verdant vistas rear'd,
Its spire majestic, to the playful breeze,
Spreading its loosely-waving panicles, while low
The purple anthers bending o'er to kiss
The silken, tassel'd styles, delight the eye
Of watchful Ceres.

Traits of the Aborigines.

Maize or Indian corn, consists of several varieties, which are thought to owe their distinctive characters to the accidental modifications of climate, soil, and culture, rather than to any original differences. The plant is described by botanists, as a strong, reedy, jointed stalk, provided with large alternate leaves, almost like flags, springing from every joint. The top produces a bunch of male flowers, of various colors, which is called the *tassel*. Each plant bears likewise one or more spikes or *ears*, seldom so few as one, and rarely more than four or five, the most usual number being three; as many as seven have been seen occasionally on one stalk, at various distances from the ground, and are closely enveloped by several thin leaves, forming a sheath, which is called the *husk*. The ears consist of a cylindrical substance of the nature of a pith, which is called the *cob*, over the entire surface of which, the seeds are ranged, and fixed in eight or more straight rows, each row having generally as many as twenty or more seeds. The eyes or germs of the seeds are in nearly radial lines from the centre of the cylinder; from these eyes proceed individual filaments of a silky appearance, and of a bright green color; the aggregate of these hang out from the point of the husk, in a thick cluster, and in this state are called the *silk*. It is the office of these filaments, which are the stigmata, to receive the farina, which drops from the flowers on the top or tassel, and without which the ears would produce no seed, a fact which has been established by cutting off the top previous to the development of its flowers, when the ears proved wholly barren. So soon as their office has been thus performed, both the tassel and the silk dry up, and put on a withered appearance.

The grains of maize are of different colors, the prevailing hue being yellow of various shades, sometimes approaching to white, and

at other times deepening to red. Some are of a deep chocolate color, others greenish or olive colored, and even the same ears will sometimes contain grains of different colors.

Geography and History.

Indian corn, when due regard is paid to the selection of varieties, may be accounted as a sure crop in almost every portion of the habitable globe, between the forty-third degree of north latitude, and a corresponding parallel south. Its principal culture is confined to the United States, Mexico, the West Indies, and most of the States of South America. It is also cultivated with success in Spain, Portugal, Lombardy, and may be grown in southern Europe generally. It is likewise found to thrive in India, China, Japan, Australia, the Sandwich Islands, as well as in the groups of the Azores, the Madeiras, Canaries, and numerous other ocean isles.

Roulin, Humboldt, Bonpland, and others, have noticed this plant in its indigenous state in America, and hence have concluded that it was first derived from this country. Mathioli, Ciega, Zeri, and Inca Garcilasso, have also confirmed this opinion. Fuchs, on the contrary, very early maintained that it came from the East. Michaud, Daru, and Bonafous, state that it was known in Asia Minor, before the discovery of America; and Crawford, in his "History of the Indian Archipelago," tells us that maize was cultivated by the inhabitants of these islands, under the name of *djagoung*, long before that period. In the "Natural History of China," composed by Li-Chi Tchin, towards the middle of the XVIth century, a rude figure is given of the Zea mays, under the title of *la-chou-cha*; and Rifaud, in his "Voyage en Egypte, &c., from 1805 to 1807," observes, that he discovered this grain in a subterranean excavation, in a remarkably good state of preservation. M. Virey, however, in the "Journal de Pharmacie," refutes these statements, by showing that these authors have mistaken the Indian millet (*Sorghum vulgare*) for maize, and that the grain found by Rifaud, was the Sorghum bicolor, which, according to Delile, is a native of Egypt. Regmir and Gregory attempt to present fresh arguments in favor of the Eastern origin of this plant. Among them is the name by which it has long been known in Europe, *Blé de Turquie*; and varieties of it, they state, have been brought from the Isle of France, or from China. Moreau de Jonnés, on the contrary, has more recently maintained in a memoir read before the Academy of Sciences at Paris, that its origin was in America. The name *Blé de Turquie*, no more proves it to be of

Turkish origin, than the name of the *English horse bean*, proves that that plant originally grew wild in Britain. The general cultivation of maize, in southern Europe, and the production of some new varieties, proves nothing with regard to the origin of the species. Nor, where it occurs in the East, there is no proof of its having been carried there previously to the discovery of America.

In favor of the American origin of maize, is the fact that it was found in a state of cultivation in most of the places where the first navigators landed. Columbus discovered it on the Island of Cuba, and other points, where he touched on his first voyage to America, Vasco Nunez, in Guiana; Narvaez and Sottus, in Florida; and Gonçalo Ximines, in New-Grenada; the latter of whom says: "The principal food of the natives was *Maiz* and *Cassave*, which first grows on stalks of the size of canes, bearing very large and weighty spikes or ears, each generally yielding seven hundred grains, a bushel of which, when planted in warm moist land, frequently produces 300 fold. The maize is distinguished into a coarser and a finer sort, which last is called *Moroche*, the leaves and stalks affording wholesome provender for horses, and the grains or kernels, bread for the inhabitants, who make it several ways; for sometimes they boil the corn in water, and at other times, parch it in the ashes, or grind it into flour, which when kneaded into dough, they make into cakes, biscuits, etc. Moreover, maize steeped in water, boiled, and afterwards, fermented, makes a very strong liquor."

All the early historians, both of North and South America, give the strongest testimony that this grain is of American origin, and speak of it as having constituted a great part of the food of the Indians, from time immemorial.

Inca Garcilasso de la Vega, in treating of the products of Peru, says, "Of the fruits that grow above ground, the chief and principal, is that grain which the people of Mexico and Barlovento call *Mayz*, and those of Peru, *Cara*, being the only bread they use. And this is of two sorts, one called *Muruchu*, which is hard, and the other *Capia*, which is tender and fine, and which is eaten as bread, either boiled, baked, or parched, over the fire. The hard kind is that which has been brought to Spain, but not the fine and tender sort." The corn of the Incas, he says, was ground by women, between two broad stones in the form of a half moon, from the flour of which, they made a kind of hasty-pudding, called *Api*, a great dish among them, esteemed as high feeding, but was not common at every meal. He

mentions another kind of bread, made of maize called *Cara*, upon which he was nourished for nine or ten years. This consisted of three sorts, namely, *Cancu*, used only for sacrifice; *Huminta*, for feasts and great entertainments; and *Tanta*, or bread of common use. Boiled cara they called *Muti*, which is also the name of boiled corn. The Virgins or Wives of the Sun, were employed in the evening in kneading great quantities of dough, which they formed into small round cakes that were eaten by the Indians only at the feasts of *Raymi* and *Citua;* for, at other times, they never eat their maize kneaded into bread, nor did they eat it at their meals, with the exception of two or three mouthfuls at the beginning. Their physicians prescribed no other diet to their sick than what was made of maize. They also made plasters or poultices of it, which they applied for the relief of aches, colics, and other pains. Of the flour of maize, mixed with water, the Indians brewed their common beverage, which, by a certain process, they were able to convert into an excellent vinegar. Of the stalks, before the maize was ripe, they made a kind of honey, and some, who loved to be drunk, lay their corn steeping in water, until germination took place, and then, after grinding, boiled it in the same water, drawed it off, and kept it until stale. This was the strongest drink the Peruvians had, which was called, in their language, *Vinnapu*, and by some of the neighbouring tribes, *Sora*. From its intoxicating effects, its use was prohibited by the Incas, who made it a penal offence with all who drank to excess.

Francisco Severio Clavigero, in describing the grain of Mexico, says, "The chief, the most useful, and most common was the maize, called by the Indians *Tluolli*, of which there are several varieties, differing in size, colour, weight, and taste. There is the large and the small sort, the white, the yellow, the blue, and the black."

Captain John Smith, in his account of the Indians of Virginia, says, "The greatest labour they take, is in planting their corne, for the country naturally is overgrowne with wood. To prepare the ground, they bruise the barke of the trees neare the root, then doe they scortch the roots with fire that they grow no more. The next yeare with a crooked peece of wood they beat vp the weeds by the rootes, and in that mould they plant their corne. Their manner is this. They make a hole in the earth with a sticke, and into it they put foure graines of wheate (maize), and two of beanes. These holes they make foure foote one from another. Their women and children do continually keepe it with weeding and when it is growne

middle high, they hill it about like a hop-yard. In Aprill they begin to plant, but their chiefe plantations is in May, and so they continue till the midst of Iune. What they plant in Aprill, they reape in August: for May in September; for Iune in October. Every stalke of their corne commonly beareth two eares, some three, seldome any foure, many but one, and some none. Every eare ordinarily hath betwixt 200 and 500 graines. The stalke being greene hath a sweet iuice in it, somewhat like sugar-cane, which is the cause that when they gather their corne greene, they sucke the stalkes; for as we gather greene pease, so doe they their corne, which excelleth their old. * * * * * Their corne they rost in the eare greene, and bruising it in morter of wood with a polt, lap it in rowles in the leaues of their corne, and so boyle it for a daintie. They also reserue that corne late planted that will not ripe, by roasting it in hot ashes, the heat thereof drying it. In winter they esteeme it being boyled with beanes for a rare dish, they call *Pausarowmena*. Their old wheat (maize) they first steepe a night in hot water, in the morning pounding it in a morter. They vse a small basket for their temmes (sieve), then pound againe the great, and so separating by dashing their hand in the basket, receiue the flower in a platter made of wood, scraped to that forme with burning and shels. Tempering this flower with water, they make it either in cakes covering them with ashes till they be baked, and then washing them in faire water, they drie presently with their owne heat: or else boyle them in water, eating the broth with the bread which they call *Ponap*. The groutes and peeces of the cornes remaining, by fanning in a platter or in the wind, away, the branne they boyle 3 or 4 houres with water, which is an ordinary food they call *Vstatahamen*. But some more thriftie then cleanly, doe burne the core (cob) of the eare to powder, which they call *Pungnough*, mingling that in their meale, but it never tasted well in bread nor broth."

Mr. Schoolcraft in his late Report, says, that it is conceded on all hands, that this is a tropical, or at least, a southern plant. He remarks, that it was not known in Europe before the discovery of this country, and that we learned the mode of cultivation from the Indians, and not they from us. It was cultivated by the Iroquois in fields sufficiently large to entitle them to the name of agriculturists. It was undoubtedly highly prized by them, as an essential article of support, as Mr. Schoolcraft states that the warriors of the Six Nations were in the habit of undertaking journeys of thousands of miles

in extent, carrying no other food than a little meal from parched and pounded corn, relying on the forest for meat. One tablespoonful of this meal, mixed with a little sugar and water, will sustain a warrior for twenty-four hours, without meat.

In further proof of the American origin of maize, it may be stated, that it is still found in an indigenous state, from the Rocky Mountains, in North America, to the humid forests of Paraguay; where, instead of having each grain naked, as is always the case after long cultivation, they are completely covered with glumes or husks. Although there has been much written upon the Eastern origin of this grain, it did not grow in that part of India watered by the Indus, at the time of Alexander the Great's expedition, as it is not mentioned by Nearchus, the commander of the fleet, among the productions of that country. It is not noticed by Arrian, Diodorus, or Columella; and even so late as the year 1471, Joan. Cuba, in his "Ortus Sanitatis," a very curious medical work on plants, trees, animals, stones, &c., does not make the least mention of it. Neither has it ever been found in any ancient tumulus, sarcophagus, or pyramid; nor has it ever been represented in any ancient painting, sculpture, or work of art, except in America! But in this country, according to Garcilasso, the palace gardens of the Incas in Peru, were ornamented with images of gold and silver, of all manner of beasts, birds, trees, flowers, and fruit. Some of the trees appeared in blossom, some with their fruit partially or fully grown, and in others it appeared quite ripe, according to the several seasons of the year. They also imitated the maize, with all its grains, spikes, stalks, and leaves; and in one instance, in the "Garden of Gold and Silver," there was an entire cornfield, of considerable size, represented with the corn in its exact and natural shape.

The introduction of maize into Europe, probably dates back to the time soon after Columbus discovered America; but little attention appears to have been paid there, either to its culture or use, until toward the close of the last century. An amusing, and in many respects an instructive work, was published some years since by William Cobbett, upon the merits of Indian corn, whose sanguine wishes upon the subject of its introduction as a field crop into England, led him farther than most people have been inclined to accompany him. A cotemporary writer remarks, that "Cobbett was corn mad at one time. He saw too soon by twenty years, and depended on cultivation rather than importation. He wrote about Indian corn, planted Indian corn, raised Indian corn, ate Indian corn, made paper of Indian corn husks, and printed a book from the Indian corn pa-

per." There is to be seen in this work a very minute and interesting account of the various manipulations which must be attended to by the maize grower before his grain is ready for sale, as well as very particular directions for turning the produce to the best and most profitable account in domestic economy.

The most important feature, perhaps, in the history of maize, is its late introduction from the United States into Great Britain and Ireland, as a cheap and nutritious article of human food. For this patriotic and philanthropic act these two nations are highly indebted to the simultaneous exertions of our friend and countryman, Henry Coleman, Esq., who has been engaged for several years in making an agricultural tour in Europe, and Dr. John S. Bartlett, late of the British Army, the latter of whom addressed a letter on the subject, in May, 1842, to Lord Ashburton, in which he arrives at the following deductions:

1st. That the laboring classes and the poor of Great Britain require *a cheaper article of food than wheaten bread.*

2d. That although wheat contains a larger portion of *gluten* or the nutritive ingredient, *bulk* is necessary, not only to satisfy the craving of hunger, but to promote digestion by the "stimulus of distension," which bulk alone can give.

3d. That the craving of hunger being removed or alleviated by the quantity taken, the mind is more at ease; the mental irritability consequent upon hunger is assuaged, and man goes to his labor with cheerfulness and vivacity, becoming a more peaceful citizen and perhaps a better man.

4th. That maize possesses a great superiority over rye, barley, oatmeal, or potatoes—not that it contains a greater quantity of *gluten*, but that its constituent parts are better proportioned, and consequently make a better article of food.

5th. That, admitted into England duty free, it would be a cheaper article of food than any of those above named, besides being vastly superior to them in nutritive and healthful properties.

6th. That it can be obtained in any quantities from all parts of the United States, and particularly from the middle and southern states, on the Atlantic sea-board, as New-York, New Jersey, Pennsylvania, Maryland, Virginia, and North Carolina, whose proximity

to the sea and ports of shipment, give them great advantages, by saving inland conveyance. The whole valley of the Mississippi also yields it in abundance.

7th. That the people of all parts of the United States are consumers of British manufactures; for in spite of national asperities, they adopt the habits, tastes, fashions, and dress of their English ancestors. This, I think, is a natural feeling in the human breast, for I never yet knew a son who was offended by being told that he resembled his parent. The imported grain then would be paid for in the products of British industry.

8th. That the rapidly increasing population and limited superficial surface of the British Isles, will speedily render a foreign supply of grain necessary, even in the most productive seasons—and consequently a reduction of duties must ensue; it is therefore advantageous to the agricultural interests, as land is becoming so valuable, to reserve as much of the soil of England as possible for the cultivation of wheat and more valuable products; and nothing will tend to promote this object more than the introduction of a copious supply of cheaper farinaceous food for the poor and laboring classes.

In closing the historical part of this memoir, it may not be uninteresting to allude to another countryman of ours, Elihu Burritt, commonly called "The Learned Blacksmith," who is at present engaged in making a pedestrian tour in various parts of Europe, and giving the result of his observations in the "Christian Citizen," from which we make the following extract :—

I have just got out "An Olive Leaf, from the Housewives of America, to the Housewives of Great Britain and Ireland, or Recipes for making Various Articles of Food, of Indian Corn Meal," containing all the recipes I received before leaving home from our kind female friends in different parts of the Union—heaven bless them! I have had 2,000 of these Olive Leaves struck off, and intended, in the first place, to send a copy to every newspaper in the realm. I shall have a thousand, all of which I shall put in the hands of those I meet on the road. I have resolved to make it a condition upon which only I consent to be any man's guest, that his wife shall serve up a johnny-cake for breakfast, or an Indian pudding for dinner. I was invited yesterday to a tea party which comes off to-night, where about thirty persons are to be present. I accepted the invitation with the johnny-cake clause, which was readily agreed to by all par-

ties. So to-night the virtues of corn meal will be tested by some of the best livers in Birmingham.

Mythology.

The Indians of Peru and the adjacent country, who existed before the empire of the Incas began, were at best but tamed animals, and often they were more brutish than the beasts of the field. They possessed no right of property, no fixed laws, no religion nor government; neither did they plow, sow, or till the earth, nor did they understand the art of weaving cotton or wool; but dwelt together in small hordes as they happened to meet in caves or holes in the rocks and mountains, subsisting on grass, herbs and roots, wild fruits and the flesh of man, with no other clothing than the leaves and bark of trees, and the skins of beasts. In short, they were altogether savage.

As ever has been the case with most of the primitive tribes of the human race, these Indians derived their original being from divers objects, animate or inanimate, of which they entertained respect, admiration, or awe. Some who lived near a great lake which supplied them with a store of fish, called that the parent whence they emerged; some esteemed the mighty Andes as their prime mother, who from her deep caverns, first gave them birth; and others fancied themselves to be the descendants of the great bird, condor, in token of which, on days of solemnity and festival, they wore its wings fastened to their arms.

Every nation, province, tribe, and house among them, had its particular idol. For their opinion was, that one god would have enough to do, to take care of its own province or family, and that its power was so limited, that it could have no virtue or extent within the jurisdiction of another. Some adored whatever they saw in which an excellence could be observed, whether good or bad. The tiger, the jaguar, and the bear, they worshipped for their ferocity, and with such humility, that they would not fly from them in case of danger, but offered themselves to be devoured. The fox and the monkey they adored for their craft; the stag, for his swiftness; the hawk, for agility and courage; the eagle, for acuteness of sight; while other nations were more considerate in their deities, and worshiped nothing except what afforded them benefit or advantage—as fountains and cool springs, which furnished them with drink; rivers, that watered their pastures; the earth, which they called their mother, because it yielded them food; the air, because it gave them breath and

life; and fire, because it warmed them, and cooked their food. Some also, made choice of sheep, cattle, or corn, and everything around them, that served most for nourishment, as a god, and worthy of divine honor. The inhabitants near the coast, made the sea their god, the name of which, interpreted in their language, signifies the "Mother Sea" The whale they deified on account of its prodigious size. In the Province of Puerto Viejo, they had a high veneration for the emerald; and near the Cordillera, they worshipped that mountain for its stupendous height.

The sacrifices which they made to these deities, were often as barbarous as the gods were senseless; for, besides beasts, fruits, and corn, they sacrificed and devoured alive men and women of all ages, whom they had taken in war. But other Indians less cruel, and more mild in their character, though they mingled blood with these rites, never took away life, but drew it from the veins of an arm, a leg, or the nostrils, according to the nature or solemnity of the sacrifice required. Others offered sheep and lambs, conies, partridges, and various kinds of fowl, herbs, fruits, and maize, so much esteemed among them, according to the deity they adored.

These people, living and dying in the manner above described, were at length reclaimed by Inca Manco Capac, who, probably, was some Indian of a more elevated understanding and prudence than ordinary, and who, by carrying a refined deportment among them, had persuaded them that he and his wife, Mama Oello Hauco, proceeded from the sun, and were come from heaven; and that his father, Pachacamac (the soul of the universe, or the sustainer of all things,) had sent them to instruct and bestow benefits on the rest of mankind. Manco Capac was the founder of the *Incas*, who were the native kings of Peru, and who, according to tradition, reigned in direct lineage, until they were conquered by the Spaniards, for the space of four hundred years. The origin of these kings, the majesty and greatness of their empire, their conquests and policies in government, both in peace and in war, together with the laws they instituted for the good and benefit of their subjects, have been recorded by one of their own descendants on the maternal side, Garcilasso, de la Vega, surnamed the Inca. Concerning the origin of these kings, he says, that, when he was about seventeen years of age, being one day present with his kindred in the imperial city of Cuzco, who were discoursing of their ancestors, it came into his mind to ask the most elderly person amongst them, by interrupting him in his discourse, the following questions:—"Inca and my uncle," said I, "How is it

possible, since you have no writings, that you have been able to preserve the memory of things past, and the origin of our kings? I observe that the Spaniards and their kindred nations have their sacred and profane histories, whereby they learn the time that their own kings, and the princes of other countries, began their reigns; when and how empires were changed and transferred; nay, so far they go, as to tell us how many thousand years are past since God created the heavens and the earth; all of which, and much more, they have learned from their books; but as to yourselves—in what manner can you retain the memory of your ancestors, or be informed of the origin of the Incas? As, for instance, who was the first of them, or what was his name? Of what lineage, or in what manner did he begin his reign? What nations did he conquer, and when did he give a being to this great empire, and with what exploits did our ancestors achieve their greatness?

"The Inca was much pleased to hear me make these inquiries, because he took great delight in recounting these matters, and turning to me, said, 'Cousin, I most willingly comply with your request; for it concerns you to hear them, and keep them in your heart. Remember then, that in ages past, all this region or country you see around us, was nothing but mountains and wild forests, and the people in those times were like so many brutes, without any religion or government, with no understanding of property or a single enjoyment of them; neither did they sow, plow, nor clothe themselves, because they had no idea of tilling the earth, and knew not the art of weaving either cotton or wool. They dwelt two by two, or three and three together, as they chanced to meet, in caves, or holes in the rocks and mountains. Their food was herbs or grass, roots of trees, wild fruits, and human flesh; and all the covering they had, consisted of the leaves or bark of trees, and the skins of beasts.

'And now, I pray that you listen with due attention, for I would not be troubled to repeat what I am to say. Our Father, the Sun, beholding these Indians as they existed in the state that I have just related, took compassion on them, and sent a son and a daughter of his own from heaven to earth, to instruct our people in his knowledge, so that they might worship and adore him, and esteem him as their God, giving them laws and precepts, unto which they might conform their lives like men of reason and refinement of manners, that they might live in houses and society, learn to till the earth, cultivate trees, plants, and corn, feed their flocks, and enjoy them as rational men, and not as brutes. With these orders and instructions, our Father, the Sun, placed his two children by the Lake Titicaca, giving

them liberty to go which way they pleased, and that, in what place soever they stopped to eat, or sleep, they should strike a little wedge of gold into the ground, which was about half a yard long, and two fingers thick, and where, with one stroke this wedge should sink into the earth, there should be the place of their abode, and the court unto which all people should come. Lastly, he ordered that when they should have subjected these people to the rules of obedience, they should maintain them with reason, justice, piety, clemency, and gentleness, performing all the good offices of indulgent parents towards the children they love; and that in imitation of him, and by his example who doeth good to all the world, by affording them light to perform their work, and the actions of life; warming them when they are cold; making their pastures and their seeds to grow, their trees to fructify, and their flocks to increase; and watering their lands with timely dews. And in order to manifest his earthly care, he said, every day I take a turn around the world to see and discover the wants and necessities of all things, in order that, as their true fomenter and parent, I may apply myself to their succour and redress. Thus, after my example, and as my children, sent upon the earth, I would have you imitate me, and to instil such doctrine into this people as may convert them from beasts into men. And henceforth I constitute and ordain you king and queen over this nation, that by your instructions, reason, and government, they may be preserved. After our Father, the Sun, had thus declared his pleasure to these, his two children, he despatched them from him; and, in taking their journey northward from Titicaca, at every place where they came to repose, they tried to strike their wedge into the ground, but to no effect; but, at length they arrived at a little inn or place of rest, in the valley of Cuzco, where they again struck their wedge of gold into the earth; which received it with the greatest ease, and which sucked it in, and they saw it no more. Then, said the Inca to his sister and wife—in this valley, our Father, the Sun, hath commanded that we should stay, and make our abode, and in so doing we shall obey his will; in pursuance thereof, it is necessary that we now separate from each other, and take different ways that we may assemble and draw the people together in such manner as we may be able to preach and propagate the doctrine among them, which has been committed to us. Our Inca, accordingly, took his way northward, and his wife to the southward, and to all the men and women, whom they met in the wild forests and uncultivated places, they declared to them that their Father, the Sun, had sent them to be teachers and benefactors, and to deliver them from the savage life they led to another, more agreeable to reason, justice, and humanity. And

in further pursuance of the commands of our Father, the Sun, they had come to gather these people from the mountains and rude places, to more convenient habitations, where they might live in human society, and subsist upon such food as was appropriated to man, and not to beasts. These, and similar declarations were announced to such savages as they met in the mountains and deserts, who, in beholding the grace of their countenances, the jewels, and the gay attire with which these two persons were adorned, and in listening to the gentleness and sweetness of their words, acknowledged them to be the true Children of the Sun, and such as were appointed to cause their people to assemble into societies, and to administer such kinds of food as were wholesome, and adapted to human sustenance. They were struck with such admiration at the sight of their figure and person, and allured with the promises they made them, that they gave entire credence to their words, obeyed them as their princes, and adored them as superior beings. And these poor wretches, relating these sayings one to another, the fame so increased, that great numbers, both men and women, flocked together, and were willing to follow to what place soever they should guide them.

'Thus great multitudes of people being assembled together, the princes commanded that provision should be made of such fruits as the earth produced for their sustenance, lest they should be scattered abroad again in small numbers, to gain their food. Our Inca taught some of his subjects these labors, which appertain unto men, as to build houses, plough, sow the land with maize and divers sort of seeds, that were useful or fit for food; to which end he instructed them how to make plows and other implements necessary for the purpose; he showed them also how to make aqueducts and reservoirs for holding water, and various other arts tending to the more commodious well-being of human life. He employed others to gather and tame the llamas and more gentle sorts of cattle into flocks, which ran dispersed and wild through the mountains and woods, that garments might be made of their wool, and shoes of their skins. On the other hand, Coya Mama Oello instructed the women the art of spinning and weaving both cotton and wool, to make garments for their husbands, their children, and themselves, with various other offices appertaining to a house. In short, nothing was omitted that would conduce to human welfare, which she did not teach her women, and the Inca his men.

'Being reduced in this manner, these Indians looked on themselves as much bettered in their condition; and with signal acknowledgments

of the benefits received, travelled with joy and satisfaction through the rocks and woods, to communicate the happy tidings of the Children of the Sun, who, for the common good of all, appeared on the earth, repeating the benefits they had received, and showing them their new habiliments, and diet, and relating to them that they lived in houses and in political society. This relation induced these wild people to mingle with their civilized brethren, in order to learn and obey; and thus, one calling and inviting the other, the fame spread far and near, and their number increased to such a degree, that in six or seven years, the Inca had composed an army sufficient for war; and having taught them how to make bows and arrows, lances, and such other weapons as we use to this day, they were not only capable of defending, but also to repulse an enemy, and to compel those by force, who led a bestial life, to live in human society.

'These were our first Incas and kings in the earlier ages of our empire, from whom the succeeding princes, and we ourselves, are descended; but how many years it may be since our Father, the Sun, sent his offspring among us, I am not able precisely to say, but I imagine that it may be about four hundred years.

'And thus having satisfied the request you made to me, at length, dear cousin, allow me to close by telling you, that in the course of my narrative, in order that I might not incline you to sadness, I abstained from venting tears from my eyes, which, notwithstanding, drop in blood on my heart, caused by that inward grief I feel, to see our Incas, and their empire ruined and destroyed.'"

To this legend, many others of ancient date might be added, one of which is, that the rays of the sun, after the universal deluge, first fell on the island in Lake Titicaca, before they appeared in any other place, and gave a sign and promise that from that spot the first doctrines of the light of knowledge should emanate, which promise was afterwards accomplished by those kings who preceded them, and taught the world to throw off their turpitude, and live according to the dictates of nature and of reason. By advantage of these and other similar inventions, it was not difficult for the Incas to persuade the rest of the Indians that they actually descended from the sun, and to confirm their belief by the manifold benefits and advantages which their doctrine and religion brought with them. On the assurance of these two fables, it is said, the Incas and all their subjects did really esteem this island to be a sacred and holy piece of ground, upon which, with that opinion, they erected a rich temple, all plated

with gold, to be dedicated to their Father, the Sun; where all the Indians of the provinces, subject to the Incas, generally assembled once a year to offer gold, silver and precious stones, in thankful acknowledgments of the great blessings they had received. And so immense was the quantity of gold and silver which was amassed in that island, besides what was cast and wrought into utensils for the service of the temple, that the report of it made by the Incas is incredible, and is more to be admired than believed. Blas Valera, a Spanish historian, in speaking of the riches of this temple, says, that after all the vessels and ornaments were supplied, he was told by the Indians of Copa-Cabano, there was such a superfluity of gold and silver, after all was finished, that another such temple might have been erected without the aid of any other materials! And that, so soon as the Indians had news of the invasion of the Spaniards, and were informed that their object was to despoil them of their treasures, they demolished their temple, and threw all the fragments and the immense wealth appertaining thereto into the great lake.

Those Incas, besides the riches they bestowed, and the encouragement they gave for the adornment of this temple, did much to improve the sterile land of this isle, so as to render it more fertile, and fit to produce fruit; and, in gratitude to the place, on which they believed their ancestors to have descended from heaven, they ennobled it by bringing it into the highest state of fertility and the best of husbandry. To this end they levelled and cleared it of rocks and stones, made gardens and covered them over with good earth and manure brought from afar, and thereby made the ground capable of producing maize, which, by reason of its elevation and its consequent coldness of climate, would not grow in the country adjacent. This grain, with flax and other seeds, they sowed in the gardens they had made, which yielded good increase, the fruits of which they sent as sacred presents to the temple of the sun, and to the select virgins, at Cuzco, with orders to distribute them in all other sacred places throughout the dominions. One year they sent presents to Cuzco, the next to another place, and the third year somewhere else, which were held in high esteem, as sacred relics, sowing some in the gardens belonging to the temples, and other public houses, and others they divided among the people. A portion of the grain they cast into the public granaries, and those of the sun and of the king, believing that some divine virtue was contained in it, and that it would bless and increase the corn with which it was mixed, preserve it from corruption, and render it more wholesome for human sustenance; and that Indian who was so happy as to be able to get but one

grain of this maize, to throw into his heap, was possessed with the belief that he should never be in want for bread in the course of his life.

During the high feast, *Capacrayni*, held in the first month, *Raymi*, agreeing with our December, no stranger was suffered to lodge in Cuzco, to which they again all assembled as soon as the festival was over, to receive cakes made of maize and the warm blood of a white alpaca, by the *Mamacunas*, (select virgins,) and distributed by certain priests, who in carrying them about in dishes of gold, gave each of the Indians one, saying as they delivered it, "If you do not reverence the Sun and Inca, this food will bear witness against you to your ruin; but, if you worship them, then their bodies, by this pledge, will be united to yours." After which, those that had eaten of the cakes, promised obedience, and thanked the Sun and Inca for their food.

In the beginning of the month *Hatuncuzqui*, which corresponds to our May, the Peruvians gathered their maize, and kept the feast *Aymorai*. They returned home, singing from the fields, carrying with them a large heap of maize, which they called *Perua*, wrapping it up in rich garments. They continued their ceremonies for three nights, imploring the perua to preserve their harvest of maize from any damage that might chance to befall it, and also to cause that to grow prosperously, which they should next plant. Lastly, their sorcerers consulted their gods whether the perua could last till the next year; and if they did not answer in the affirmative, they carried it into the fields and burned, or parched it, with the view of making a new perua, which they bore to their granaries in great triumph, and mingled it with other corn.

The corn plant, or its fruit, also entered into the forms, the ceremonies, and the mythology of many other tribes, which, from the limited length of this memoir, and the want of accurate information on the subject, are necessarily omitted. The following allegory, however, which was related to Mr. Schoolcraft by the Odjibwas, will be read with interest by all who have a fondness for this branch of literature.

"A young man went out into the woods to fast at that period of life when youth is exchanged for manhood. He built a lodge of boughs in a secluded place, and painted his face of a sombre hue. By day he amused himself in walking about, looking at the various

shrubs and wild plants, and at night he lay down in his bower, which being open, he could look up into the sky. He sought a gift from the Master of Life, and he hoped it would be something to benefit his race. On the third day he became too weak to leave the lodge, and as he lay gazing upwards, he saw a spirit come down in the shape of a beautiful young man, dressed in green, and having green plumes on his head, who told him to arise and wrestle with him, as this was the only way in which he could obtain his wishes. He did so, and found his strength renewed by the effort. This visit and the trial of wrestling were repeated for four days, the youth feeling at each trial, that although his bodily strength declined, a moral and supernatural energy was imparted, which promised him the final victory. On the third day his celestial visitor spoke to him. 'To-morrow,' said he, 'will be the seventh day of your fast, and the last time I shall wrestle with you. You will triumph over me and gain your wishes. As soon as you have thrown me down, strip off my clothes, and bury me in the spot, in soft fresh earth. When you have done this, leave me, but come occasionally to visit the place to keep the weeds from growing. Once or twice cover me with fresh earth.' He then departed, but returned the next day, and, as he had predicted, was thrown down. The young man punctually obeyed his instructions in every particular, and soon had the pleasure of seeing the green plumes of his sky visitor, shooting up through the ground. He carefully weeded the earth and kept it fresh and soft, and in due time was gratified by beholding the matured plant bending with its yellow fruit, and gracefully waving its green leaves and yellow tassels in the wind. He then invited his parents to the spot, to behold the new plant. 'It is Mondamin,' replied his father, 'it is the spirit's grain.' They immediately prepared a feast, and invited their friends to partake of it, and this is the origin of Indian corn."

Properties and Uses.

There is no species of the Cerealia, which manifests itself under such varied forms, sizes, colors, and chemical ingredients, as maize. While some persons have estimated it in value, equal, if not superior to all other kinds of grain, others, on the contrary, have placed it in the lowest station in the group to which it belongs. It has been contended by some, that it contains no gluten, and little if any ready formed saccharine matter, and hence, could possess but a very small nutritive power, while others have observed that domestic animals, which are fed on maize, very speedily become fat, with their flesh at the same time, remarkably firm; that horses which consume it, are

enabled to perform their full portion of labor, are exceedingly hardy and require but little care; and that the inhabitants of the countries where it forms a large share of their food, are, for the most part, strong, healthy, and long lived. The investigations of vegetable chemistry, however, have more recently revealed to us many important and interesting facts on these points, yet our knowledge on the subject is far from being complete.

According to Marrabelli's analysis of Zea mays, made twenty or thirty years ago, it contains a saccharine matter of different degrees of purity, from which alcohol, the oxalic and acetous acids, may be obtained; a vegetable amylaceous substance; a glutinous substance; muriate and nitrate of magnesia; carbonates of potash, lime, and of magnesia; and iron.

According to the analysis of M. Payen, maize consists of the following ingredients: One hundred parts by weight yielded,

Starch,	28.4
Nitrogenized matter,	4.8
Fatty matter (oil),	35.6
Coloring matter,	0.2
Cellular tissue,	20.0
Dextrine,	2.0
Various salts,	7.2
Loss,	1.8
	100.0

The proportion of oil is evidently overrated in this analysis, and the error is attributed by Dr. Jackson to the solubility of the *zeine* or gluten of the corn in ether, which Payen used to dissolve the oil. The gluten being taken up by this process, was mistaken for oil and credited in the analysis as such, when it should have been put under the head of nitrogenized matter. It is not surprising, he remarks, that M. Dumas, in quoting this analysis, should observe that "individuals who eat corn for some time, present symptoms of an accumulation of fat in their tissue, which will not appear astonishing, when we consider that a bushel of corn would yield a quart (litre) of oil!" If this doctrine were true, those Americans who derive a great part of their subsistence from Indian corn, would be an excessively fat people.

According to the analysis recently made in England by Professor Playfair, some specimens of corn of American growth, yielded, in one hundred parts by weight, the following proportions:

Proteine,	7
Fatty matter,	5
Starch,	76
Water,	12
	100

By this analysis it would seem that maize contains less proteine or nutritive matter, than wheat, oats, or barley, but more than either rice or potatoes. In fact it contains about three and a half times the quantity of nutritive matter found in potatoes, and a much larger proportion of starch, and less water. It also contains more fatty matter than any of these products, which is a very important consideration where the mere fattening of animals is taken into account. Hence, as an article of food, either for man or animals, it is superior to potatoes and rice, but inferior to wheat, oats, or barley. It is relished by all animals that are not exclusively carniverous, and certainly is highly nutritious.

According to the researches of Dr. Charles T. Jackson, of Boston, who stands preeminent as a chemist, Indian corn in general, is composed of variable proportions of starch, dextrine, gum or mucilage, sugar, gluten, oil, the phosphates of lime and magnesia, with a little phosphoric acid, silica, potash, and oxide of iron. Some varieties, however, are nearly or quite destitute of gluten, oil, or the salts of iron.

Among the curious results of Dr. Jackson's experiments, he proved that the relative proportions of phosphates in grain, depend on the assimilating power of each species or variety; for an ear of corn having been selected which had on it two different kinds, namely, the Tuscarora and the sweet corn, more than double the amount of phosphates were obtained from the latter than from the former, notwithstanding the kernels came from the same ear, grew side by side from the same sap, and were derived from the same soil. Hence it may be inferred that a crop of sweet corn will sooner exhaust a soil of its phosphates than any other variety, and if a soil be deficient in these materials, more must be added to produce it in perfection. Some interesting facts were also noticed by him in the varia-

ble proportions of phosphates in different varieties of the same species of several kinds of grain, and a greater preponderance of them was observed in Indian corn, than in the smaller grains, as barley, oats, wheat, &c., a fact which seems to explain their peculiar properties as food for animals; for the more highly phosphatic grains appear to be more likely to surcharge the system of adult animals with bony matter, often producing concretions of phosphate of lime, like those resulting from gout. It is conjectured that the stiffness of the joints and lameness of the feet common in horses, which have been fed too freely with maize, is caused by the preponderance of the phosphates. Granting this to be true, young animals cannot fail to derive more osseous matter from corn than from any other kind of grain.

The horny or flinty portions of corn, when viewed in thin sections under a good microscope, will be found to consist of a great number of six-sided cells, filled with a fixed oil, which has been successfully employed for the purposes of illumination. It is stated that a distillery has been established in the vicinity of Lake Ontario, where this oil is extracted, at the rate of sixteen gallons from one hundred bushels of corn, leaving the remaining portion of the corn more valuable and in better condition for distillation than before the oil is extracted. On this oil depends the *popping qualities of corn*. For, when the kernels are heated to a temperature sufficiently high to decompose the oil, a sudden explosion takes place, and every cell is ruptured by the expansion of gaseous matters arising from the decomposition of the oil, and the formation of carburetted hydrogen gas, such as is sometimes used in lighting large cities, the grain being completely evoluted and folded back, or turned inside out. This property is remarkably strong in the pop corn, and is common in a greater or less degree, in all kinds of corn that abound in oil; but those varieties destitute of a horny covering, as the Tuscarora, and white flour corn, will not pop under any circumstances whatever.

This change in corn, is one of considerable importance, so far as regards facility of digestion; for, after the decomposition or extraction of this oil, it is more readily digested by man, though less fattening to poultry, cattle, swine, &c.

One important use of the oil in corn, is undoubtedly to prevent the rapid decomposition of the kernels, when sown in the soil, and to retain a portion of pabulum or food, until needed by the young plant, and is always the last portion of the grain taken up. It also

serves to keep meal from souring, as it has been observed that a flint corn meal will keep sweet for years, even when put up in large quantities, without being kiln-dried; while the meal of Tuscarora corn will become sour in a very short time.

The colors of Indian corn usually depend on that of the epidermis or hull, and sometimes on that of the oil. If the epidermis be transparent, the color may depend either upon the oil, or the combined particles of which the corn is composed; but if the hull be opaque, the grain will present the same color. For example, the yellow color of the golden Sioux is derived from the yellow color of the oil; and the Rhode Island flint-corn on the colorless particles of its starch and oil, which are distinctly seen through its transparent hull; but red and blue corn owe their lively hues to the colors of their epidermis, and not to the oil.

The proportions of oil in corn, as far as it has been examined, varies from an entire absence to eleven per cent., according to the varieties employed.

When corn is hulled by means of potash ley, a portion of the oil is converted into soap, and the epidermis becomes detached. The caustic alkali also liberates ammonia from the mucilage around the germ.

Oily corn makes a dry kind of bread, and is not sufficiently adhesive to rise well without an admixture of rye, or other flour.

The oil of corn is easily convertible into animal fat by a slight change of composition, and consequently serves an excellent purpose for fattening poultry, cattle, and swine. Starch, also, is changed into fat, as well as the carbonaceous substances of animals, and during its slow combustion in the circulation, gives out a portion of the heat of animal bodies; while, in its altered state, it goes to form a part of the living frame. Dextrine and sugar act in a similar manner, as a compound of carbon, hydrogen, and oxygen.

From the phosphates of grain, the substance of bone and the saline matters of the brain, nerves, and other solid and fluid parts of the body, are, in a great measure, derived.

The salts of iron go to the blood, and these constitute an essential portion of it, whereby it is enabled, by successive alterations of its

degree of oxidation during the circulation through the lungs, arteries, extreme vessels and veins, to convey the oxygen to every part of the body.

By soaking Indian corn, after it has been cut open, in a watery solution of sulphate of copper, (blue vitriol,) the result will give a decisive proof of the presence of phosphoric acid. The "chits," or parts containing the germs, will be changed to a bluish-green, beautifully defining the limits of the phosphates of lime and of magnesia contained in the grain.

By soaking a kernel of corn split open longitudinally and thrown into a solution of sulphydrate of ammonia, the chit is soon changed to a dark olive-color, which arises from the change of the salts of iron into a sulphuret of that metal.

By cutting open, in a similar manner, a kernel of maize, or any other kind of grain, and dropping upon it a small quantity of the tincture of iodine, a portion of its bulk will be immediately changed to an intense blue, indicating the presence of starch, with here and there a deep port-wine-colored speck, which will define the parts composed of dextrine. If the oil is extracted from the transparent part of the corn by alcohol, or ether, the tincture of iodine will indicate the presence of starch in that part of the grain associated with the gluten.

By these means, we may readily cause any grain to define the extent and precise limits of each of its ingredients; and by the eye, we can form a pretty correct estimate of their relative proportions in different seeds.*

The varieties of Indian corn are very numerous, exhibiting every grade of size, color, and conformation, between the shrubby reed that grows on the shores of Lake Superior, to the gigantic stalks of the Ohio valley, the tiny ears with flat, close-clinging grains of Canada, the brilliant, rounded, little pearl, or the bright-red grains and white cob of the eight-rowed hæmatite, to the swelling ears of the big white, and yellow gourd-seed of the South. The principal varieties cultivated in the United States, which may be distinguished by the number of rows of grains on the cob, and the color, shape, or size of the kernels, may be classified and described as follows:—

*See Jackson's Report on the Geology and Mineralogy of New Hampshire, pp. 255 et seq.

Yellow Corn.—The colors of the varieties coming under this head, as before observed, are dependent mainly on the shades of the oil, as seen through the transparent epidermis or hull.

1. *Golden Sioux* or *Northern Yellow Flint-Corn*, derived from the Sioux Indians, in Canada, having a large cob, rather short as to length, with twelve rows of moderately-sized grains, abounding in oil, and is regarded as one of the best varieties for fattening animals, or for human food. By skilful tillage, 130 bushels have been raised to an acre, weighing 9,216 lbs. in the ear. When dry, 75 lbs. of ears gave a bushel when shelled. Several valuable hybrid varieties have been produced between the Sioux and the King Philip, the gourd-seed and the Sioux, &c.

2. *King Philip* or *Eight-rowed Yellow Corn*; so called after the celebrated chief of the Wampanoags, of that name, from which tribe the seed was originally obtained. The ears, which contain only eight rows, are longer, the cob smaller, and the grains larger than those of the golden Sioux, and it will yield about the same quantity of oil. It is a hardy plant, much esteemed in New England as a substantial article of food, where it has been cultivated from times anterior to the landing of the Pilgrims. From this variety, a number of superb kinds have been obtained, among which, are a beautiful ten and twelved-rowed hybrid from which the golden Sioux, and the well known *Browne Corn*, improved by my brother, Mr. John Browne, of Long Island, in Lake Winnipissiogee. The latter variety was produced by cultivating selected ears for a succession of years, of the King Philip corn, with small but-ends, the second ripe, in the field, and taken from stalks which bore more than two ears each. The grains of this corn are large, the cob small, and the ears usually from ten to thirteen inches in length, with only eight rows. It ripens a little later than the golden Sioux, and is very prolific, the greatest crop, per acre, that has yet been raised, being 136 bushels, weighing, in the ear, 9,520 lbs., or 70 lbs. to the bushel, and 59 lbs., when shelled.

Canada Corn or *Eight-rowed Yellow*.—This corn, which is smaller, earlier, and more solid than any of the preceding, contains more oil than any other variety, except the rice corn, and the pop corn, properly so called. It is highly valued for fattening poultry, swine, &c., and is grown by many, in gardens, for early boiling or roasting, when green. Notwithstanding it is very prolific in ears, it is

seldom planted in fields, except in regions where the larger kinds will not thrive.

4. *Dutton Corn.* A variety first brought into notice, in 1818, by Mr. Salmon Dutton, of Cavendish, Vermont. The ears of corn from which it was originally selected, on an averege, were from eight to twelve inches long, and contained from twelve to eighteen rows. The cob is larger, and sometimes grows to the length of fourteen or fifteen inches, but the grain is so compact upon it, that two bushels of sound ears have yielded five pecks of shelled corn, weighing 62 lbs. to the bushel. With proper management, an acre of ground will produce from 100 to 120 bushels. As it abounds in oil, gives a good yield, and ripens at least two weeks earlier than the Canada corn, it has long been a favourite for culture at the North.

5. *Southern Big Yellow Corn.*—The cob of this variety is thick and long, the grains much wider than deep, and where the rows unite with each other, their sides fall off almost to a point. This gives the outside ends of the grain a circular form, which imparts to the ear an appearance somewhat resembling a fluted column. The grain contains less oil and more starch than the northern flinty kinds, yet its outward texture is somewhat solid, flinty, and firm. It comes rather late into maturity, affords an abundant yield, and is much used for fattening swine. Mixed with either of the white gourd-seed varieties, the *Yellow Gourd-Seed* is produced, which is often mistaken for an original form.

6. *Southern Small Yellow Corn.*—The ears of this sort are more slender, as well as shorter, than the last named variety; the grains are smaller, though of the same form, of a deeper yellow, more firm and flinty, and contain an abundance of oil, which renders them more valuable for the purposes of shipping, or for feeding to poultry and swine. Although it is less productive than the big yellow, it ripens earlier, and consequently is sooner out of the reach of the autumnal frosts. Some valuable hybrids have been produced between this and the big yellow, the Virginian white gourd-seed, and other large varieties.

7. *Peruvian Big Yellow Corn.*—(*Mais amarillo,*) the grains of which are large, rather heart-shaped, solid, opaque, and abound in oil.

8. *Peruvian Small Yellow Corn.*—(*Mais morocho,*) with small bright yellow, or reddish-brown grains.

White Corn.—The varieties which constitute this division are exceedingly variable, both as regards their composition and size, as well as in their yield and times of coming to maturity.

1. *Rhode Island White Flint-Corn.*—The grains of this variety are about the size and shape of the Tuscarora corn, but differ from them in containing a transparent and colorless oil, which may easily be seen through their clear, pellucid hulls. The farinaceous parts of the grains are white, and as the quantity of the oil they contain is large, the flour is more substantial as an article of food, and less liable to ferment and become sour. In Rhode Island, where it produces an abundant yield, it is a favorite grain, and stands in high repute.

2. *Southern Big White Flint-Corn;* having a large thick cob, with twelve rows of kernels, much resembling in shape and size, those of the big yellow, and like that variety, is less productive than the white Virginia gourd-seed. It contains more starch and less oil than the northern flint-corn; but is much softer and a better food for horses, though not so fattening to poultry and swine. When ground into meal, it is apt to become sour, and consequently is unfit to be shipped in that state, unless previously prepared by being kiln-dried. From this variety originated the genuine *White Flint-Corn*, employed for making the excellent hommony, so much in use in the Middle and Southern States.

3. *Southern Little White Flint-Corn.*—The kernels of this variety are considerably smaller than those of the preceding, and much resemble them in shape; but they are more firm and solid, contain more oil, and consequently are more valuable for feeding poultry and swine, and for human food. Although the cob is smaller in proportion to the size of the ears, the yield, per acre, is less abundant, and hence is but little grown.

4. *Dutton White Flint-Corn;* a variety not differing materially from the yellow Dutton corn, except in the color of its oil.

5. *Early Canadian White Flint-Corn;* cultivated principally for early boiling or roasting, while green.

6. *Tuscarora Corn;* a variety obtained from the Tuscarora Indians, in the State of New York. The ears contain from twelve to sixteen rows of grains, which are nearly as deep as they are broad, of

a whitish color on the exterior, and composed entirely within, of pure white dextrine and starch, except the germs. As it contains neither gluten nor oil, it may profitably be employed in the manufacture of starch. It is much softer and better food for horses than the flinty kinds, and if used before it becomes sour, it may be converted into an excellent bread.

7. *White Flour Corn.*—The ears of this variety contain twelve rows of rather thick, roundish grains, which are filled with a snowy white flour, composed principally of starch, but does not contain either gluten or oil. It is much used in some parts of the country, particularly in New Jersey, for grinding up with buck-wheat, mixed in proportion of four or five to one of corn, in order to improve the color and other qualities of the buckwheat flour. As it possesses similar properties as the preceding variety, it may be profitably employed for the same purposes.

8. *Virginia White Gourd-Seed Corn.*—The ears of this corn, which are not very long, neither is the cob so large as those of the big white or yellow flint, contain from twenty-four to thirty-six rows of very long, narrow grains, of so soft and open a texture, that they will not bear transportation, by sea, unless they are previously kiln-dried, or completely excluded from the moist air. These grains at their exterior ends are almost flat, and grow so closely together from the cob to the surface, that they produce a greater yield than any other variety, in proportion to the size of the ears. They contain more starch and less gluten and oil than those of the flint kinds; and from their softness, they serve as better food for horses, but are less nourishing to poultry and swine. The color of this variety is always white, unless it has been crossed with other kinds, which may invariably be known by a small indenture in the ends of the grains, when perfectly dried. The oily and glutinous part of the Virginia gourd-seed always occur on the sides of its elongated grains, while the starch projects quite through to their summits, and by contraction in drying, produces the pits or depressions peculiar to their ends. This variety is later ripe, though more productive than any other kind. Several valuable hybrids have been produced by its cross fecundation with the yellow and white flinty sorts, among which, are the *Yellow Gourd-Seed*, and the celebrated *Burden* and *Baden* varieties, the latter of which has produced as many as ten ears to a stalk.

9. *Early Sweet or Sugar Corn*, sometimes called *Pappoon Corn.*—This variety was introduced into Massachusetts, in 1779, by Captain Richard Bagnal, of Plymouth, from the country bordering on the Susquehannah, on his return from the expedition against the tribes of the Six Nations, under the command of General Sullivan. There are two kinds of this corn, one with the cob red and the other white. The ears are short, and usually contain eight rows, the grains of which, when mature, are of a light color, and become shrivelled and appear as if they were unripe. It contains an unusually large proportion of the phosphates, and a considerable quantity of sugar and gum, though but little starch. It is extensively cultivated for culinary purposes, and serves as a delicious food, either green or dry.

Hæmatite or Blood-red Corn, and Varieties of Different Shades.—The lively hues, peculiar to the red, blue, and purple corns, generally depend on the shades of the epidermis of the grains, and not the oil. The origin of these colors appears to be purely accidental, as white and yellow varieties have been planted at remote distances from any other kind, and have produced kernels of a brilliant red. The different shades of color in corn are supposed to be caused by different proportions of iron, or other metals, combined with oxygen and some acid principle, acted upon by the rays of light.

1. *Rice Corn*, a variety with small ears, the grains of which are of various shades of color, and often are of the size and shape of rice. It contains more oil and less starch than any other kind; and when ground, it cannot be made into bread alone, but is dry like sand. From its oily nature and convenient size, this corn is peculiarly adapted to feeding fowls.*

2. *Pop or Parching Corn*, sometimes called *Valparaiso Corn*, *Zea curagua*, of botanists, and *Mais amarillo de Cancha*, of the inhabitants of Peru.—The ears of this variety are small, the grains are semi-transparent, square shaped, with elongated heads; having various shades of color, and contain next to the rice corn, more oil and less starch, than any other kind. Its flavor is pleasant, when parched, for which purpose it is generally preferred. This variety is believed to be the *Cara* of the Incas of Peru, which, when parched, they call *Cancha*, signifying a neighborhood or street.

* See Dr. Jackson's Report, pp. 258 et 259.

PREPARATION AND DIRECTIONS FOR COOKING INDIAN CORN.

Kiln-drying.

In order to prepare Indian corn for shipping, it should previously undergo the process of kiln-drying, which is performed by parching or drying it in a heated chamber, or in a cylinder of wire-work, or sheet iron, exposed over a furnace or stove, a sufficient length of time to destroy its sprouting or germinating power. The temperature of the chamber in which it is dried, should not much exceed the boiling point of water, or 212° F.; but the time required for exposing the grain, should vary according to the openness or compactness of its texture, its degree of moisture or dryness, and the scarcity or abundance of the oil which it may contain. As a general rule, it should be removed from the kiln as soon as the burnt or parched odour is perceived, as it then begins to lose its substance or nutritive power.

The varieties of corn that will best bear transportation by sea without kiln-drying, are those which contain a large proportion of oil, as the Golden Sioux, the King Philip or Northern Eight-rowed Yellow, the Dutton, the Browne, the Rhode Island White-Flint, &c.; but the flower or meal made from these sorts, is not so pleasant to the taste of those unaccustomed to its use, as that made from the soft farinaceous varieties of the South and West, which will be greatly improved, and preserved free from mustiness, by the process of kiln-drying.

Grinding.

It has been truly said, that "no kind of grain is actually spoiled by grinding too fine, except Indian corn," although wheat is somewhat injured. But good corn bread, hommony, mush, and various other dishes cannot be made of flour ground too fine. For all ordinary purposes, the common mill employed for grinding wheat, answers equally well for grinding maize. When it is required to grind the corn coarse, it is necessary only to elevate the uppermost stone and increase its speed; or to depress the stone and diminish its velocity to grind it fine. In general, the grits, or larger parts of the meal, should vary from one-fourth the size of a grain of mustard to that of a grain of rice, according to the uses to which they are to be applied. For very exact and special kinds of meal, the *Kibbling-mill* is preferable, in many respects, as the size and uniformity of

the grits can be regulated at pleasure by an indifferent hand; whereas, in the common mill for grinding wheat, their degree of fineness or coarseness depends entirely on the judgment and skill of the miller, by regulating the position and velocity of the uppermost stone, and a due attention to feeding in the grain.

A kibbling-mill consists of "a small iron cylinder, usually about eight or nine inches wide, and six inches in diameter, tapering slightly to one end, and fluted on the inside. Within this, a barrel of the same form, but of a less size, and fluted on the outside, revolves by the turning of a spindle on which it is fixed. The meal is rendered finer or coarser in proportion as the working barrel is set nearer to, or farther from, the small end. This mill is made entirely of iron and steel, and is usually attached to a post. It is provided with a hopper, and is worked by a crank fixed at one end of the spindle, while a fly-wheel revolves at the other. It is used for beans, peas, and other pulse; for malt and various kinds of grain, and is a very useful and ingenious contrivance, but requires care in its adjustment and general management."*

RECIPES.

The following recipes have been obtained from persons of skill and experience in the preparation of maize for food, several of them having been presented to the New-York Farmers' Club, with samples of cooking, which were pronounced as excellent, and met the entire approbation of all who tasted them.

To Boil Green Corn.

The proper state in which to eat green corn, is at the time that the milk flows upon pressing the kernels with the thumb nail. It is best when boiled in the ear with the husks on, the latter of which should be stripped off when brought to the table. The ears should then be covered with butter, with a little salt added, and the grains eaten off the cob. Over-refined people think this vulgar, and shave them off close to the core, but in so doing they lose much of their sweetness.—*American Agriculturist.*

* Professor Johnton.

To Pop or Parch Corn.

Fill an iron pot with sand, and set on the fire till the sand is very hot. Two or three pounds of the grain are then thrown in, and well mixed with the sand by stirring. Each grain bursts and throws out a white substance of twice (four times) its bigness. The sand is separated by a wire sieve, and returned into the pot to be again heated, and repeat the operation with fresh grain. That which is parched, is pounded to a powder in mortars. This being sifted will keep long for use. An Indian will travel far, and subsist long, on a small bag of it, taking only six or eight ounces of it per day, mixed with water.—*Dr. Franklin.*

Modern Modes of Popping Corn.

Take a gill, a half pint, or more, of Valparaiso or Pop Corn, and put in a frying pan, slightly buttered or rubbed with lard. Hold the pan over a fire, so as constantly to stir or shake the corn within, and in a few minutes each kernel will *pop*, or turn inside out, and is ready for immediate use. May be eaten with, or without, a little sugar or salt, added while hot in the pan.

A very ingenious contrivance has been invented within a few years for parching corn, which, if rightly managed, surpasses every other mode. It consists of a box made of wire gauze, with the apertures not exceeding one-twentieth of an inch square, and is so constructed that the corn can be put within it, without being burnt, and can be held over a hot fire made either of wood or coal. The carbureted hydrogen gas, produced within the box by the decomposition of the oil in the corn, is prevented from explosion in a similar manner as *fire-damp* in mines is prevented from explosion by the safety-lamp.

Succotash.

To about half a pound of salt pork, add three quarts of cold water, and set it to boil. Now cut off three quarts of green corn from the cobs; set the corn aside, and put the *cobs* to boil with the pork, as they will add much to the richness of the mixture. When the pork has boiled, say half an hour, remove the cobs, and put in one quart of freshly gathered green shelled beans; boil again for fifteen minutes; then add the three quarts of corn, and let it boil another fifteen minutes. Now turn the whole into a dish, add five or six large spoonfuls of butter, season it with pepper to your taste, and with salt also, if the salt of the pork has not proved sufficient. If the liquor has boiled away, it will be necessary to add a little more

to it before taking it away from the fire, as this is an essential par of the affair.—*Western Farmer and Gardener.*

Succotash in Winter.

Take, when green, your corn, either on the cob or carefully shelled, and your beans in the pod. Dip them in boiling water, and carefully dry them in the shade where there is a free circulation of air. Pack them up in a box or bag, in which they should be kept in a dry place; and succotash may be made from them as well in winter as in summer.—*Agriculturist.*

Samp or Hulled Corn.

Take a pint, a quart, or more, of the grains of hard, ripe flint or gourd-seed corn; soak them over night in a *lessive* or ley, and then pound them in a large wooden mortar, with a wooden pestle; the skin of each grain is by that means peeled off, and the farinaceous part left whole, which, being boiled, swells into a white soft pulp, and eaten with milk, or with butter and sugar, is delicious.—*Dr. Franklin.*

Hommony.

Wash a pint of grits, (particles of flint-corn ground to one-fourth the size of a grain of mustard, with the finer parts of the flour separated by a sieve,) in two or three waters, taking care each time to let them settle. When you pour off the water, the grits must be well rubbed with the hands, in order to separate them from the finer particles of flour. Then put them into a sauce-pan, with a pint of water slightly salted, and let them boil slowly for nearly half an hour, occasionally stirring the mixture as soon as it begins to boil.

Hommony may be boiled to any consistency that may be preferred, from that of mush to the dryness of rice.—*A. Barclay, Esq., H. B. M. Consul at New York.*

Indian Gruel.

Take one quart of boiling water and stir in two or three tablespoonfuls of finely sifted Indian meal, previously mixed with a little cold water. Add salt to your liking, and let the mixture boil for fifteen or twenty minutes. A small quantity of pulverized crackers, a few raisins, or a little sugar added, will render it more palatable to the sick.—*From a Lady.*

Hasty-Pudding.

Called *mush* by the Pennsylvanians; *suppawn* in the State of New-York; *stir-a-bout* in Ireland; *polenta* in Italy; and *api* by the ancient Peruvians. Boil a quart, three pints, or two quarts of water, according to the size of your family. Stir into a bowl of cold water, five or six tablespoonfuls of fine Indian meal, and pour it into the kettle of water as soon as it begins to boil. Stir the mixture well, add salt to your taste, and let it boil down to a thick gruel. Then sprinkle in, handful by handful, finely sifted Indian meal, stirring briskly all the while with a wooden spatula or slice, until it is sufficiently stiff to need a strong hand. It usually requires about half of an hour to be thoroughly cooked. May be eaten with milk, butter, sugar or molasses.—*A Lady.*

Fried Hasty-Pudding.

Cut the pudding when cold, into slices half of an inch thick, and fry them brown on both sides, in a little butter or lard, and it serves as an excellent substitute for potatoes or buck-wheat cakes. If made of the meal of white or yellow flint-corn, a small quantity of wheaten or rye flour should be added to the mush while cooking, to prevent its crumbling when fried.—*Ibid.*

Boiled Indian Pudding.

Boil a quart of milk, and stir in Indian meal till it is nearly as thick as you can stir it with a spoon; then add a teaspoonful of salt, a cupful of molasses, a teaspoonful of ginger, or ground cinnamon, and cold milk enough to make a thin batter. Boil in a thick bag four hours. Care should be taken that the water does not stop boiling while the pudding is in. A dish made in this way, with the addition of a quart of chopped, sweet apples, and baked from four to six hours, will be found delicious when served up hot and eaten with sauce made of drawn-butter, nutmeg, and wine.—*A Lady.*

The Farmer's Own Pudding.

Take 3 lbs of northern yellow corn meal, 1 lb of beef suet, 1 lb of dried currants, half a teaspoonful of salæratus, and incorporate the whole while dry, well together in a large dish. Then add and continually stir, $1\frac{1}{2}$ pints of molasses, and a sufficient quantity of boiling hot water to reduce the mixture to the thickness of common mush, and let it stand over night in a moderately warm place. The next morning, tie up the whole in a wide-mouthed bag, taking care

to leave room enough within, to allow the pudding to swell, and incessantly boil for four or five hours. This pudding may be eaten while hot, with or without sauce, and will be sufficiently large to feed twenty men. One-half or one-fourth of the quantity of ingredients may be employed, and treated in the same manner as the whole.—*A Lady.*

Baked Indian Pudding.

To 2 quarts of milk, add 1 quart of meal, a little salt and a cupful of sugar. Prepare by heating the milk over the fire, stirring it occasionally to prevent its burning ; when it nearly boils, remove it, put in the salt and sugar, and scatter in the meal, stirring rapidly to prevent its collecting into lumps ; put in nutmeg and turn into a deep pan. Bake immediately or otherwise, as may be convenient, in a hot oven, three hours. When it has baked an hour or more, pour over the pudding from a gill to a half pint of milk; this will soften the crust and form a delicious whey.

An inferior pudding may be made by substituting skimmed milk and molasses, with allspice or ginger for seasoning. This is the common Yankee pudding. Variations can be made by adding chopped suet, apples, peaches, berries, or raisins.—*Burritt.*

Suffolk county, L. I. Indian Pudding.,

Heat 3 half pints of milk to boiling; mix your corn meal with a half pint of cold milk, the meal having been previously sifted; and pour the cold milk and meal into the boiling milk, stirring continuously. When scalded take it off the fire and let it cool down to blood warm. Then mix in 10 eggs, previously beaten, until they will stand alone, a little salt, a quarter of a teaspoonful of ground nutmeg, a quarter of a teaspoonful of cinnamon, a teaspoonful of allspice or pimento; sweeten with sugar or molasses; stir in a pinch of ground ginger, a pinch of grated dried lemon peel, a teaspoonful of butter, and bake. Good either hot or cold.—*From Professor Mapes.*

Prescott Pudding.

Take a teacupful of fine Indian meal, and a pint of molasses well mixed. Add, by constantly stirring, a quart of hot boiling milk, a piece of butter of the size of an English walnut, 3 eggs, and a teaspoonful of salt. Pour the mixture into a buttered pan, and bake in a moderately hot oven three hours. This pudding was much used in the family of the late Judge Prescott of Boston, in Massachusetts, from whose lady this recipe was obtained.

Corn Bread.

In stopping at Bement's American Hotel, in Albany, a few weeks since, I do not know when I have relished any food better than I did some excellent corn bread, which I found on his breakfast table. I was so well pleased with the article, as well as with the general character of his house, that I begged of him to furnish me with a recipe for making it, which is as follows:—

Take 3 quarts of milk a little sour, 7 eggs, 2 ounces of butter, 1 teaspoonful of salæratus, and mix with Indian meal, to the consistency of a thick batter, and bake with a strong heat. The pans used for baking are of tin, 8 inches in diameter, $1\frac{1}{2}$ inches deep, and a little bevelled. The above is sufficient for seven or eight loaves. —*Amer. Agriculturist.*

Indian Bannock.

Take 1 quart of sifted meal, 2 great spoonfuls of molasses, 2 teaspoonfuls of salt, a bit of shortning half as big as a hen's egg, stirred together; make it pretty moist with scalding water; put it into a well greased pan; smooth over the surface with a spoon, and bake it brown on both sides before a quick fire. A little stewed pumpkin, scalded with the meal, improves the taste. Bannock split and dipped in butter makes very nice toast.—*From a Lady.*

Superior Corn Bread.

Take 1 quart of sour milk, add the beaten yolks of 8 eggs and a handful of Indian meal, briskly stirring the mixture while adding the meal. To this add a half teaspoonful of salæratus, 2 tablespoonfuls of melted butter, and stir in alternately the beaten white of the eggs, and a sufficient quantity of meal to form a smooth batter of the consistency of hasty-pudding. Then turn the mixture into well buttered tins, and bake in a brisk oven. The time required for baking, will depend upon the size and thickness of the bread. For smaller parcels, one-half or one-fourth of the above named materials may be used.—*From Judson's Hotel, N. Y.*

A Rich Corn Bread.

I send you a receipt for making corn bread, such as is used at every meal at my house. I have stopped at nearly all the fashionable hotels in the Union, and never have found anything that has equalled it. It should be tried by every one who wishes to have a superior bread.

Take 1 egg well beaten, a half pint of thick cream, Indian meal sufficient to form a thick batter, a small quantity of salt; add half a teaspoonful of salæratus dissolved in a small quantity of water; after mixing thoroughly, put it into the pans or oven, and bake immediately.—*Amer. Agriculturist.*

Excellent Hommony Bread.

Break two eggs into a bowl and beat them from five to ten minutes. Add by continually stirring, a salt-spoon of table salt, 4 or 5 tablespoonfuls of hot hommony reduced nearly to the consistency of thick gruel, with hot milk, 1 large spoonful of butter, and a pint of scalded Indian meal squeezed dry. Make up the mixture into small loaves or round cakes, 1½ inches thick, and bake in a brisk oven. —*From A. Barclay, Esq.*

Epicure's Corn Bread.

Upon 2 quarts of sifted corn meal, pour just enough boiling water to scald it thoroughly; if too much water is used it will be heavy. Stir it thoroughly, and let it get cold; then rub in a piece of butter as large as a hen's egg, together with 2 teaspoonfuls of fine salt; beat 4 eggs thoroughly, which will be all the better if the whites and yolks are beaten separately, and add them to the meal and mix thoroughly. Next, add a pint of sour cream, butter-milk, or sour-milk (which stand in the order of their value). Dissolve 2 teaspoonfuls of salæratus in hot water and stir it in. Put it in buttered pans and bake it.

In winter it may be mixed over night, and in that case, the eggs and salæratus should not be put in until morning. When ready for the oven, the mixture ought to be about as thin as good *mush*, if not, more cream should be added.

If you are not an epicure already, you will be in danger of becoming one, if you eat much of this corn cake, provided it is well made.—*Beecher's Western Farmer's and Gardener's Almanac.*

Hoosier Biscuit.

Add a teaspoonful of salt to a pint of new milk, warm from the cow. Stir in flour until it becomes a stiff batter, add 2 great spoonfuls of lively brewer's yeast; put it in a warm place and let it rise as much as it will. When well raised, stir in a teaspoonful of salæratus dissolved in hot water. Beat up 3 eggs, (2 will answer,)

stir with the batter, and add flour until it becomes tolerably stiff dough; knead it thoroughly, set it by the fire until it begins to rise, then roll out, cut to biscuit form, put in pans, cover it over with a thick cloth, set by the fire until it raises again, then bake in a quick oven. If well made no direction will be needed for eating. [This bread is thought to be improved by adding to the mixture a small quantity of Indian meal.]

As all families are not provided with scales and weights, refering to ingredients generally used in cakes and pastry, we subjoin a list of weights and measures:

Weight and Measure.

Wheat flour, 1 pound is 1 quart.
Indian meal, 1 pound 2 ounces is 1 quart.
Butter, when soft, 1 pound 1 ounce is 1 quart.
Loaf-sugar, broken, 1 pound is 1 quart.
White sugar, powdered, 1 pound 1 ounce is 1 quart.
Best brown sugar, 1 pound 2 ounces is 1 quart.
Eggs, average size, 10 eggs are 1 pound.

Liquid Measure.

Sixteen large tablespoonfuls, are half a pint.
Eight large tablespoonfuls, are one gill.
Four large tablespoonfuls, are half a gill.
A common sized tumbler, holds half a pint.
A common sized wine glass, holds half a gill.

Allowing for accidental differences in the quality, freshness, dryness, and moisture of the articles, we believe this comparison between weight and measure to be nearly correct.—*Ibid.*

Boston Brown Bread.

Take 1 quart of rye meal, 2 quarts of Indian, (if not fresh, scald it,) half a teacupful of molasses, 2 teaspoonfuls of salt, 1 teaspoonful of salæratus, 1 teacup of home brewed yeast, or half the quantity of distillery yeast, make it as stiff as can be stirred with a spoon with warm water, and let it rise from night till morning. Then put it into a large deep pan, smooth the top with the hand dipped in cold water, let it stand a few minutes, and then bake it in an oven five or six hours. If put in late in the day, it may remain in the oven over night.—*Miss Beecher's Domestic Receipt Book.*

ORIGIN OF FLOWERS.

By R. L. Pell, Esq., of Pellham.

Origin of Flowers.—The rose, (Rosaceæ,) of all flowers is the most beautiful: perhaps there is no flower grown in our borders, that is more distinguished for its form, fragrance and beauty. They are natives of Europe, Asia, Africa, and America. There are more than one hundred distinct species, and above 2,300 named varieties; the most valuable kind is, probably, the Rosa centifolia, which came originally from Eastern Caucasus, and from which that most fragrant essential oil, the Altar, is expressed; the whole family of roses require rich, well pulverized, free soil. Dig your hole two feet and a half square and two feet deep; fill it half full of well decomposed manure and charcoal dust, and incorporate the whole thoroughly with surface soil, then set your plant, spread the roots fan shaped, and fill in with surface soil, keeping the roots several inches above the surrounding border; complete the operation, with the subsoil—the same mode should be adopted with all the plants I may describe hereafter.

Azalea.—(Ericaceæ,) are extremely pretty flowering plants, and are natives of North America, Turkey and China. The Chinese varieties require to be kept under glass, in our climate; they are easily raised by seed, and hybridize readily. They are classed by botanists, among the Rhododendron tribe of plants. They enjoy a heath mould or sandy loam, and should be kept shaded when the sun is very powerful.

The Cactus.—(Cactaceæ,) are natives of tropical regions. The greatest variety are found on the dry arid plains of Mexico and Brazil, where the natives are accustomed to tap them, and drink the liquid they contain; cattle likewise frequently bruise them with their hoofs, and suck the moisture from them. Some of the varieties grow

fifty feet high, and branch out at the top like the candelabra; others grow to the height of sixty feet, without a single limb. Gardeners generally recommend they should be kept without water. I have found to the contrary, that they enjoy moisture as much as any green house plant I have, and they are daily watered with other plants.

Coreopsis.—(Derived from the Greek word *koris*, a bug.)—They are beautiful plants, and were probably originated in Greece; they flower very early in the season, are perennials, will stand our winters, and grow in almost any common garden soil. You may propagate them by dividing the root, or from seed.

Calceolaria.—(Schrophularinæ,) are singular plants in one respect, which is, that the shrubby kinds, will unite freely with the herbaceous, by hybridizing. They came from Chili, South America; bear beautiful purple and spotted flowers; may be grown in borders, provided they are protected in winter; may be cultivated from cuttings and seed; require a muck soil with sand, and much moisture.

Camellia.—(Terustræmiaceæ,) is a splendid evergreen shrub, from China. It is now so well known in this country, that it scarcely needs description; the variegata is an extremely beautiful variety, and one of the most hardy—still they will not under any circumstances stand our winter; they enjoy a sandy loam, mixed with muck and rotten-leaf mould; the temperature of your camellia house should never fall below fifty degrees, if it does the buds will all fall off; they may be propagated from cuttings.

Campanula.—(Campanulaceæ,) are very pretty herbaceous plants, and are natives of Asia, they are mostly perennials, and bear beautiful deep blue flowers; pyramids may be formed with them, and they will grow to a great size in good mould.

Calycanthus.—(Calycanthaceæ,) are deciduous shrubs, natives of North America, and yield dark purple flowers remarkable for fragrance, they may be propagated by layers, and enjoy a deep loam soil.

Cape Jasmine.—(Rubiaceæ,) are natives of the East and West Indies, they bear large white flowers, and are exceedingly sweet; the plant requires much warmth to bring it to perfection—they are usually propagated by cuttings, will strike readily in pure sand, under glass: and enjoy a rich loam compost.

The *Adlumia.*—(Fumariacæ,) is a biennial climber, bearing pink flowers; it is a native of North America, and is grown from seeds, which are usually sown in the fall. They produce flowers during the whole summer and make a pretty cover for a trellis.

Agapanthus.—(Hemerocallidacæ,) or blue African lily, is a beautiful bulbous rooted plant, much like the leek; it is a native of Africa, and enjoys a rich loamy soil well pulverized. It may be increased by dividing the roots.

Agave.—(Amaryllidacæ) is a succulent plant, from South America; in that country it flowers every ten years; in South Carolina every fifty years; and with us once in a hundred years,—it is consequently called the century plant; its flowers grow on the top, and resemble a candelabra; they are often more than fifty feet high; when the plant ceases to flower it immediately dies. The South Americans distil from it a drink, use the fibres of the leaves for thread, and the feculent substance contained in the stem for soap.

Hydrangea.—(Saxifrageæ,) is a native of this country, and requires a rich soil; its branches should be cut in, always after flowering, or they will produce tufts at the ends, which are unsightly.

Dahlia.—(Compositæ,) was dicovered in Mexico by Baron Humboldt, in 1789, and sent by him to Madrid. In 1804, Lady Holland introduced it from Madrid into England. Humboldt named it Dahlia in honor of the Swedish Professor, Dahl. They have been cultivated from seed, and by hybridizing, until the varieties have become almost innumerable. There are now twelve distinct species known. Last year my gardener succeeded in striking dahlias by planting the recent green growth in small pots filled with charcoal dust; he did not lose a single one out of a large number. The tubers should always be taken up in November, dried thoroughly, and placed upon a shelf in your green house. In the spring every eye should be taken off the main bulb, and planted separately in pots. On the first of June they may be transferred to the flower borders.

Globe Amaranth.—(Amaranthacæ,) supposed to be the Amaranth of the poets, which was considered to be the emblem of immortality. It was universally used at funeral ceremonies, in the days of Homer. It was worn by the Thessalians at the funeral of Achilles, and is to this day used in several parts of Europe, for the same purpose. It is a tender annual, and must be raised in a hot bed; still the flow-

ers are of great durability, and on this account were considered the emblem of immortality.

Heart's Ease, or Pansy.—Sprung from the wild Viola tricolor; when grown from seed the varieties that may be obtained defy calculation, as they are innumerable; they may likewise be readily hybridized, and the hybrids may be again cross bred with each other; the roots may also be divided and planted out advantageously, but the best varieties are propagated by cuttings taken from the extremities of the shoots and struck in pure white sand. They may likewise be raised by layers. Heaths are all from the Cape of Good Hope; they are raised under glass from cuttings, struck in white sand. I have found charcoal dust better for that purpose than sand; they require much water, and if allowed to become dry and withered never recover.

Verbenas, Petunias, and Fuchsias are beautiful trailing plants, which strike readily from cuttings, and are easily raised from seed; they will grow in any good garden soil, and may be considered the easiest of all plants for a lady to cultivate. When you wish to raise hybrids, you must fertilize one plant with the pollen of another; the anthers of the flower that is expected to yield the seed must be removed before they burst. The pollen from the flower from which you intend to form the hybrid, must be applied with a hair pencil to the stigma of the flower which is to produce the seed; save that seed pot, and you have effected your object.

Mesembryanthemums are natives of the arid plains, near the Cape of Good Hope. They are difficult to raise, and should be grown in a rich loam soil, kept open with anthracite coal ashes.

Gallardia—(Compositæ,) are very beautiful herbaceous plants, natives of North America, and grow best in sand.

Geranium.--(Geraniaceæ,) properly called Pelargoniums—orignated in southern Europe, they are a most beautiful tribe of plants, and may be cultivated very readily at any season of the year under glass, will in six weeks throw out a sufficient quantity of roots to enable you to transplant into pots; to make them produce flowers well, they should be frequently potted.

Gladiolus.—(Iridaceæ,) are bulbous plants, with long spikes of beautiful showy bell-shaped flowers, and natives of the Cape of Good

Hope; after the bulbs have flowered, and the leaves decay, they should not be watered until potted the following season, and should be kept in a dry place.

Glycine.—(Leguminosæ,) is a very valuable climber; it bears pea-shaped flowers, is a native of China, and was introduced into England in 1816, where it has been acclimated, so that it bears our climate pretty well; and is readily propagated from layers and cuttings; the seeds seldom ripen in this region.

Clycyrrhiza.—(Leguminosæ,) the liquorice plant, is a perennial, bearing small blue flowers, and is a native of the South of Europe. The liquorice is made by boiling the root; it requires a very rich soil, but it is not worth growing except as a curiosity.

REMARKS ON THE ORIGIN OF FRUITS.

By D. J. Browne, Author of the Sylva Americana, &c.

The origin of most of our common edible fruits, as well as that of our garden and field vegetables, is involved in great obscurity. The varieties, or races, have been greatly multiplied, either from a proneness to change from their original types, without any apparent cause, or from the influence of soil, climate, hybridization, and culture, which, in some instances, are more or less accidental or temporary.

The Orange.

All the varieties of the *Orange* (*Citrus aurantium*,) are believed to be derived from the same stock, although some are more acid, and others more bitter in their flavor. It is supposed to have been originally a native of the warmest part of Asia, and has long since been acclimated to the more temperate and tropical countries throughout the globe. At present, it grows wild in Florida, Cuba, and other parts of America, where it has been produced from stocks originally introduced by the Spaniards from Europe. This wild fruit, in most cases, is small and of a bitter sour, though in some instances it is large and sweet. According to Galesio, who described forty principal kinds of orange, as cultivated in Italy, the Arabs, when they penetrated India, discovered it there, and brought it to Europe by two distinct routes,—the sweet ones through Persia to Syria, and thence to the shores of Italy and the south of France, and the bitter ones by Arabia, Egypt, and the North of Africa, to Portugal and Spain.

The Wine Grape.

The *Wine Grape* of Europe (*Vitis vinifera*,) is generally considered to have originated in Persia, whence it was introduced into Egypt, Greece, Sicily, and afterwards to France, Spain, and parts of Europe. Its cultivation was probably among the earliest efforts of human industry; for we read that one of the first acts of Noah,

after being saved from the deluge, was to plant a vineyard. This species, however, has existed for ages, in a wild state, in the woods and hedges of Provence, Languedoc, and Guienne, in France, where it differs from the cultivated vine, in having smaller and more cottony leaves, and very small fruit, rather austere than sweet. These wild vines, which were called by the ancients *labrusca*, are still known in the south of France by the names of *lambrusca* and *lambresquiero;* but whether these vines are indigenous or have degenerated into their present wildness from those originally brought from the East, we have no means of knowing.

The vines originally brought to France from other countries, it is said, were not superior in quality to many of our native grapes, but have since been improved by cultivation, from which it may be inferred that, when a portion of the industry will have been bestowed upon our *Catawba* and *Isabella*, that has, for so many ages and by so many nations, been devoted to the melioration of the European grape, we shall no longer be indebted to the Old World for wine. Hence the importance of producing new varieties of our native grapes from seeds, by grafting, or innoculation, and if possible by hybridization, and doubtless many valuable varieties would be the result.

The Almond.

The *Almond* (*Amygdalus communis,*) was formerly classified in the same genus with the peach, of which it is regarded, by many, as the parent, as trees have been found with almonds in a state of transition to peaches. Du Hamel states that the fruits of the peach-like-leaved almond (Amandier-pecher) vary upon the same branch, from ovate to obtuse in its shape, with the husk rather fleshy, to ovate, compressed, accuminate, and the husk dry. And Mr. Knight, late President of the London Hort. Society, considered the fruit called *Tuberes*, by Pliny, as swollen almonds, having raised a similar one himself, by dusting the stigma of the almond flower with the pollen of the peach, which produced a tolerably good fruit.

The almond is indigenous to Syria and Northern Africa, and has been naturalized in most of the temperate regions of the globe. In a wild state, its fruit is sometines found with bitter kernels, and at other times sweet.

The Peach.

It is not certain in what part of the globe the peach-tree (*Persica vulgaris,*) was originally produced; for, although we have early accounts of its being brought to Europe from Persia, it does not follow

from thence, that it was one of the natural productions of that country. Pliny relates that it had been stated to possess venomous qualities, and that its fruit was sent into Egypt, by the Kings of Persia, by way of revenge, to poison the natives; but he treats this story as a mere fable, and considers it the most harmless fruit in the world. He expressly states that it was imported by the Romans from Persia; but whether it was indigenous to that country, or sent thither from a region still nearer the equator, we have no information.

THE NECTARINE.

Although the *Nectarine* (*P. v. lævis,*) is considered by some botanists as a distinct species, there can be but little doubt of their being derived from the same type, as the fruits of the peach and that of the nectarine have both been found growing on the same branch; and even one instance is recorded, where the fruit had the smooth surface of the nectarine on one side, and the downy skin of the peach on the other.

THE APRICOT.

The *Apricot* (*Armeniaca vulgaris,*) is indigenous to Armenia, Caucasus, the Himalayas, China, and Japan. It is supposed, however, to have originated in Armenia, but Regnier and Sickler assign it a parallel between the Niger and Mount Atlas. Pallas considers it to be a native of the whole of Caucasus; and Thunberg describes it as a very large, spreading, branchy tree, in Japan.

THE PLUM.

It is the opinion of some authors that the common *Domestic Cultivated Plum* (*Prunus domestica,*) and all its varieties, as well as the *Bullace Plum*, originated from the common sloe of Europe. On this point, botanists do not agree.

The Apricot-like-plum (*P. d. armeniöides, or drap d' or,*) is thought to be a hybrid between the wild plum and the wild apricot.

The domestic cultivated plum is believed to be indigenous to the south of Russia, Caucasus, the Himalayas, and to many parts of Europe. Falkner makes it a native of Asia, and an introduction, into Europe, of the Crusaders.

THE CHERRY.

The *Common Garden Cherry* (*Cerasus vulgaris,*) is regarded by all ancient authors as of Asiatic origin; but whether it is truly in-

digenous to any part of Europe, modern writers differ in opinion. Pliny states that it did not exist in Italy till after the victory which Lucullus won over Mithridates, King of Pontus, 68 years B. C. He tells us that, "In 26 years after Lucullus planted the cherry-tree, in Italy, other lands had cherries, even as far as Britain, beyond the ocean." According to Abbe Rosier, Lucullus brought into Italy only two superior varieties of cherry; the species which were the origin of all those now in cultivation, being, before his time, indigenous to Italy, and the forests of France, though their fruit was neglected by the Romans. At present, however, the common cherry is no where found in an apparently wild state, in any part of Europe, or America, except near human habitations.

The Pear.

The *Common Pear* (*Pyrus communis*,) is indigenous to Europe, Western Asia, the Himalayas, and to China; but not to Africa nor America. Professor De Candolle describes two forms of the wild species, comparatively permanent, from which all of our cultivated varieties have been derived. The earliest writers mention the pear as growing abundantly in Syria, Egypt, and in Greece; and it appears to have been brought into Italy from these places about the time that Sylla made himself master of the last named country, although there is but little doubt that the Romans had several kinds of this fruit long before his time.

Among the trees which Homer describes as forming the orchard of Laertes, the father of Ulysses, we find the pear. Theophrastus speaks of the productiveness of old pear-trees, the truth of which is verified by the trees of the present day. Pliny describes the varieties in cultivation in his time, as being exceedingly numerous, and says that a fermented liquor was made of the expressed juice; and Virgil mentions some pears which he received from Cato. According to Pownell, the pear was imported into Marseilles by the Phocæan colonists, sometime during the middle ages.

The cultivated varieties of the common pear succeed both in the temperate and transition zones of the two hemispheres; and it is remarkable that this tree will perfect its fruit within the verge of the tropics, when grown at a proper elevation above the sea, at about the same period of the year as in Europe and the United States.

THE APPLE.

The *Common Apple-Tree* (*Pyrus malus*,) or some allied species, grows spontaneously in almost every part of the northern hemisphere, except in the torrid and frigid zones, and some of the islands in the ocean. This tree, by itself, or conjointly with other species or races, is the parent of innumerable varieties and subvarieties, generally known by the name of "cultivated apples." Many of them are not only derived from the *wild* apple, or *crab*, of Europe, but from the crabs of Siberia and Astrachan. The fruit of trees raised from *pips*, or seeds of the same apple, differs both from that of the parent tree, and from each other; from which circumstance, and the intermixture of different species or variety by hybridization, it is utterly impossible to trace the multitude of cultivated sorts to forms from which they have been obtained.

In Britain, Ireland, and North America, the common apple-tree occurs wild, in hedges, and on the margins of woods. It is cultivated for its fruit, both in the temperate and transition zones of both hemispheres, even in the southern parts of India, on the Himalayas, and in China and Japan. And it is a curious fact, that no plant is ever seen in Guiana, without either leaf, flower or fruit, except the common apple-tree, which never changes its original nature, but blossoms and bears leaves and fruit at about the same time of the year as with us.

That the common apple-tree is a native of the eastern part of the world, there can be no doubt; but whether the fruit called "apples" by the early writers in "Holy writ," was identical with the fruit at present bearing that name, we have no certain means of knowing. Apples are mentioned by Theophrastus, Herodotus, and Columella; and the Greeks, according to Pliny, called them *Medica*, after the country whence they were first brought in ancient times; but others conjecture that the term "*Medica*," was more probably applied to the citron and the peach, both of which are supposed to have been introduced from Media into Greece. That the *Epirotica*, from Epirus, were what we call apples, there can be no question; as they are described by Pliny, as a fruit with a tender skin, that can easily be pared off; and besides, he mentions "crabs" and "wildings," as being smaller, "and for their harsh sourness they have many a foul word and shrewd curse given them." The cultivated apple, however, was not very abundant at Rome, in his time; for he states that "there were some trees in the villas near the city, which yielded more profit than a small farm, and which brought about the inven-

tion of grafting." "There are apples," continues he, "that have ennobled the countries from which they came; and our best varieties will honor their first grafters forever; such as took their names from Matius, Cestius, Manlius and Claudius." He particularizes the "quince-apples," that came from a quince grafted upon an apple-stock, which smelled like a quince, and were called "*Appianna*," after Appius, of the house of Claudius. It must be confessed however, that Pliny has related so many particulars as facts, concerning the apple, (such as changing the fruit to the color of blood, by grafting it on the mulberry; and the tree in the Tyburtines country, "grafted and laden with all manner of fruits," which are regarded by modern grafters as physiological impossibilities,) it would seem that very little confidence could be placed in his statements of any kind. But what reason have we to doubt the authority of a man, whose life was devoted to the benefit of mankind, and whose death was caused by his perseverance in search of truth? Instances of grafting trees of different families upon one another, are also mentioned by other old authors, and even our Evelyn, of more recent times, states that he saw in Holland, a rose engrafted upon the orange. Columella, a practical husbandman, who wrote some years before Pliny, describes three methods of grafting, as handed down to him, by whom he calls the "ancients," besides a fourth method of his own, and a mode of inarching, or grafting by approach, "whereby all sorts of grafts may be grafted upon all sorts of trees."

The art of grafting, as well as that of pruning, has been ascribed to accidental origin. The occasional natural union or inarching of the boughs of distinct trees in the forest, is thought to have first suggested the first idea of grafting; and the more vigorous shooting of a vine, after a goat had browsed upon it, is said to have given rise to the practice of pruning.

The Quince.

The *Quince*, (*Cydonia vulgaris*,) is supposed to have been originally, a native of Sidon, a city of ancient Crete, now the island of Candia; but it is much more probable that it was only first brought into notice in that city. It is considered at present, as indigenous to the south of France, particularly on the borders of the Garonne, and to Germany on the banks of the Danube.

It was known to the Greeks and the Romans, and both nations held it in high estimation. Columella says: "Quinces not only yield pleasure, but health." He speaks of three kinds:—the "Struthian,"

the "Must Quince," and the "Orange Quince." Pliny mentions many kinds, some growing wild in Italy, and others in cultivation, so large that they weighed the boughs on which they grew, down to the ground. He also states that some were of a green, and others of a golden color, the latter of which were called *Chrysomela.* The only kind that was eaten raw, he states to have been raised by grafting the large quince upon the stock of a small variety, called *Struthla.*

The Gooseberry.

The *common Gooseberry* (*Ribes grossularia,*) occurs truly wild in France, Germany, and Switzerland; and on the authority of Mr. Royle, a species nearly allied to it, is found on the Himalayas, near the most inaccessible sources of the Ganges. It has become naturalized both in Britain and in North America, where it grows in hedges, near old walls, and sometimes in pastures and woods. According to some, it is thought to be indigenous to the last named country, but is known to botanists under various names.

The gooseberry does not appear to have been known to the ancients, and it is uncertain at what period it began to be cultivated in gardens; the earliest notice of it appears to be by Mathiolus, in his Commentaries published at Venice, in 1558, who states that it is a wild fruit, which may be used medicinally.

The Currant.

The *common Red Currant* (*Ribes rubrum,*) or some allied species, is found indigenous in many parts of Europe, in the north and west of Asia, and in North America, in the region of the arctic circle. There is no positive evidence that the ancients cultivated this fruit any more than that they did the gooseberry; although it is probable, that they were acquainted with both, and modern botanists have not been able to identify them among the plants mentioned by the Greek and Roman authors. On the authority of Joan. de Cuba, a Dutch botanist, who wrote in 1471, a very curious medical treatise on plants, animals, and stones, entitled "Ortus Sanitatis," the currant was actually described before his time by Isaac Benares, a Jew, as growing wild on the snowy mountains of Syria. The fruit then, as now, was regarded as styptic and refrigerating in its properties, and was employed in making rob or jellies.

The Mulberry.

The *Black Mulberry* (*Morus nigra,*) is generally supposed to be a native of Persia, where there are still masses of it found in a seemingly wild state; and, although the date of its introduction into Europe is unknown, it is occasionally to be met with in Italy, apparently wild. This tree, however, is so frequently confounded with the white mulberry, by the earlier writers, as to render it next to an impossibility to ascertain the countries of which it is truly indigenous. It has been known from the earliest records of antiquity, being mentioned in " Holy writ," in the second book of Samuel, and in the Psalms. Ovid evidently points out the black mulberry as the one introduced in the story of Pyramus and Thisbe; and Pliny seems to allude to it, where he observes that there is no tree that has been so much neglected by the wit of man, either in grafting or giving it names; " an observation," as Mr. Loudon remarks, " which holds good to the present day, respecting the black mulberry, as it has only one trifling variety or rather variation, and no synonyme, whereas there are numerous varieties of the Morus alba."

The Fig.

The common *Fig-tree* (*Ficus carica,*) is indigenous to the west of Asia, and the shores of the Mediterranean, both in Europe and in Africa. In no country is it found at a great distance from the sea, and rarely in very elevated situations. Hence its abundance in the islands of the Grecian Archipelago, the Azores, Madeira, and the Canary Isles, and on the adjacent continent.

According to the traditions of the Greeks, the origin of the fig may be traced back to the remotest antiquity. It was probably known to the people of the East before the cerealia, and stood in the same relation to the primitive inhabitants of society, as the banana does to some of the present tribes of Africa, or the Indians of South America. With little trouble of cultivation, it supplied their principal necessities; and afforded, not only an article of occasional luxury, but of constant food, either in a fresh or in a dried state. As we proceed to a more advanced stage of civilization, we still find the fig an object of general attention. It is often mentioned both in the Old and New Testament, in a manner to induce us to conclude that it formed a principal part of the food of the Syrian nation.

The fig was a fruit much admired by the Romans, who brought it from most of the countries they conquered, and had so increased the varieties in Italy, by the commencement of the Christian era, that

Pliny has furnished us with a description of twenty-nine sorts. He says, "figs are restorative, and the best food that can be taken by those who are brought low by long sickness, and are on the recovery." He adds, "that figs increase the strength of young people, preserve the elderly in better health, and make them look younger, and with fewer wrinkles."

The process of *caprification*, which has been used from time immemorial, in the Levant, is described by Theophrastus, Plutarch, Pliny, and other authors of antiquity, and more recently by Tournefort; and though it is laughed at by many of the French physiologists of the present day, it is thought by many that it must be of some important use. We think it too curious a circumstance, however, in a notice of this species, to be omitted, as it furnishes a convincing proof of the reality of the sexes of plants. The operation consists in inducing a certain species of insect of the gnat kind, (Cynips,) which abounds on the wild fig, (Caprificus,) to enter the fruit of the cultivated varieties, for the purpose of puncturing its pericarp, in order to deposit its eggs, and thereby hasten its maturity. By this means the fertile flowers in the interior of the fruit become fecundated by the farina of barren ones near the orifice; but, without this operation, though the fruit may ripen, but few effective seeds are produced. It is alleged by Bosc, that there is no other object in this practice than that of hastening the maturity of the crop; but others are of opinion, that, by insuring the fecundation of the stigma, it tends to increase the size of the fruit, and by filling it with mature seeds to render it more nourishing; as appears to be the case with the Osage orange.

LEATHER.

By Charles M. Leupp, New-York.

This great branch of domestic industry, ranking in value and extent with those of cotton, wool, and iron, claims a high position among the manufactures of the State of New-York. Our commercial metropolis imports and distributes a greater number of foreign hides than any other city in the United States, and a larger number of *sole leather* or heavy hides, than any other city in the world; while our inexhaustible forests of hemlock, abundance of water power and facilities of transportation, secure us advantages beyond those of any other State in the union.

It is only within the last thirty years that New-York has become the manufacturer of sole leather for other states and countries. Previously, and indeed subsequent to 1845, we were mainly supplied with oak leather from the States of Pennsylvania, Delaware and Maryland; while Massachusetts and Vermont, furnished us with hemlock leather. Comparatively little leather of oak tannage is manufactured in this State, owing to the scarcity of oak bark, and its inferior strength for tanning purposes. We still continue to receive the principal part of our oak leather from the southern and western States, where the oak tree is found growing in greater quantities and strength.

In regard to hides. While our imports of foreign, chiefly from South America, do not on an average exhibit much falling off, (the average of the past ten years being 692,000 annually,) our domestic hides have increased largely. The prairies of the west seem capable of growing cattle almost as abundantly as the campagnas of South America, and the tanneries of the western States, and north-western part of the State of New-York, which formerly drew their supplies of foreign hides from the city of New-York, are now almost exclusively stocked with hides, the produce of the countries bordering on the lakes. Canada, which in past years derived large supplies of leather from this city and State, now receives only her stocks of for-

eign hides from here; while by duties which are in effect prohibitory, and with the advantage of a draw-back of five per cent on foreign hides imported through the States, she is enabled to supply herself with leather from her own tanneries cheaper than we can furnish it.

Since the removal of duties on leather in England, considerable shipments of oak and hemlock leather have been made to that country; but owing to the fact of its being a new article, with the quality of which the consumers there were unacquainted, it met with but partial favor and dull sale. The system of economy so rigidly carried out there, demands that we should prepare our leather to suit their wants and prejudices. Instead of being shaped in sides with the head and offal attached, they prefer it in *butts*, in other words, the hide so trimmed as to be free from head, shanks, and other less valuable parts, which are used for different and inferior purposes. Several parcels have been so prepared, and immediately met with ready sale at remunerating prices, and extensive stocks are now in process of tanning, especially adapted to the English market. Our superior natural advantages in the cheapness of hides, bark, and facilities of tanning, render it certain that we shall supply that country with leather. The difference in the cost of bark alone, is as five to thirty, and bark constitutes one third of the cost of tanning in this country, and much more than that in Europe.

The opening of this business to us, in England, will act as a powerful stimulus to our tanners to excel in their trade; for although improvements in quality, and economy in the art of tanning have been steadily advancing, we have not made that rapid progress which ought to have resulted from our natural advantages. The mass of consumers in this country prefer an inferior article at a low price, rather than a good article at a high price; in other words, they will wear out two pairs of poor shoes in preference to one pair of good ones, notwithstanding the latter may be intrinsically the most lasting and serviceable. In England, the reverse of this is the case. There, consumers will wear the best and most durable, because they are in fact the cheapest.

The display of leather at the last Annual Fair, was unquestionably the best yet exhibited, and nearly all the articles shown, challenge competition with the like manufactures of any country in Europe. The French have heretofore excelled in the manufacture of calf skins, mainly in one or two particulars, toughness and mellow-

ness being the chief. Those exhibited at the fair, rival the French skins in both these respects; and in fineness of finish, excel them. Our bark tanned sheep skins are decidedly superior, both in beauty and intrinsic excellence. In japaned leather, the Germans and French still maintain their supremacy, but we are confident they must speedily yield it.

We deem it proper before closing these remarks, to allude to two specimens of band leather, each of like excellence, and both superior in every particular to any used in Europe. Indeed we know of applications from England for this very article, but owing to the fact of there being a heavy duty on "articles of leather cut into strips," which band leather is, we have not been able to introduce it there to any extent. We anticipate however, that it will find a market there before long, and to the mutual advantage of both countries.

We annex a table, showing the quantity and value of sole leather inspected in the city of New-York, from 1827 to 1846, inclusive. The quantity is taken from the returns of the State Inspectors, and the value is determined by estimating the weight and price, assuming as a basis, the average weight and price realized by one of the most extensive houses in that branch of business in the city of New York.

TABLE

Showing the quantity and value of Sole Leather inspected in the city of New-York, from 1827 to 1846, inclusive.

Year.	*No. of sides.*	*Av. weight of side.*	*Total No. of pounds.*	*Average price.*	*Value.*
1827	265,353	13	3,449,589	$18 55	$639,898 75
1828	284,978	13¼	3,775,958	19 61	740,465 36
1829	264,878	14¼	3,774,511	19 61	740,181 60
1830	326,297	16	5,220,768	19 61	1,023,792 60
1831	440,000	15¾	6,930,000	20 67	1,432,431 00
1832	667,000	14¼	9,504,750	18 28	1,737,468 30
1833	882,609	15	13,239,135	16 69	2,209,611 63
1834	828,175	15¾	13,043,756	14 57	1,900,475 24
1835	784,165	16	12,546,640	15 63	1,961,039 83
1836	925,014	16	14,800,224	18 28	2,705,480 94
1837	890,962	15	13,364,430	16 96	2,266,607 32
1838	749,556	15⅕	11,393,251	18 02	2,053,063 83
1839	772,255	15⅓	11,841,243	19 25	2,279,439 28
1840	638,112	15¾	10,050,264	17 22	1,730,655 46

1841	687,101	17	11,680,717	17 66	2,062,814 62
1842	886,868	17	15,076,756	15 00	2,261,513 40
1843	867,210	17½	15,176,175	14 46	2,194,474 90
1844	1,048,770	16 9/10	17,724,213	14 38	2,548,741 82
1845	1,037,500	17½	18,156,250	13 01	2,362,128 12
1846	1,074,256	16 8/10	18,047,500	12 00	2,165,700 00
	14,321,060		228,796,130		$37,015,984 00

EXTRACTS

From the Correspondence of the American Institute.

Mr. Townsend of Long Island, speaking of the potato disease so prevalent the past year, says:

"I have cultivated potatoes for sale in the market for thirteen years past, generally the Mercer, on the same ground. There is no black speck in them, nor do they degenerate. I attribute the disease to the peculiar season. My early planted potatoes are all good; some of my late ones have been bad. The long wet spell of weather last spring followed by long continued heat, injured the crop. Those which I saved from my early planting for seed, are as good as any I ever had. Some of my neighbor's potatoes always have black spots in them. I raise a thousand bushels a year, and they are always in demand. My method is to plant where corn was the year before, but I have planted the same ground for three years in succession. At the time when complaint was loudest of the destructiveness of the disease, my crop was as good as usual. The ground has all had poudrette upon it for four years past. I use also long horse manure in the drills, putting the potatoes on the top of it. As soon as the potato plants appear, I use a heavy bush drawn by two horses, and thus level the face of the field. I afterwards plow twice, once from the potatoes, next towards them; I hoe them well, but hill up very little. I always have changed my seed as much as possible, getting them from Maine, Vermont, &c.; I plant of these some bushels for seed of the succeeding year. My Mercer is as good as the Kidney, generally, and a greater crop."

DISEASE OF THE POTATOE.

In a communication made to the Institute, by Mr. J. Lodge, of Morrisania, he says: I have paid some attention to the many complaints that have gone the rounds of the papers, relating to the

disease in the potato, and truly it may be so called, as in all cases where lands are not tilled properly to carry out the work nature requires, disease will more or less follow; and here I beg leave to remark, that ever since the *Solanum tuberosum* was introduced into Europe, which is now only two hundred and forty-eight years, it has been improving in quantity and quality, and invariably best where most labor has been bestowed on the land. Our seasons vary, sometimes very hot and dry, followed by heavy freshets and floods. Lands thus drenched, and not drained by proper deepening and breaking through the hard pan, must suffer, and will inevitably cause curl in the leaf, premature in its growth, and stop the progress of the tuber, and in this tender state disease will follow. Some persons will say, ' my land lies high and dry,' and therefore does not require draining, but moisture. Then, I say, deepen your land, that it may receive rain when it comes, and by continually working the crop you will retain it.

This vegetable should be kept in constant cultivation until it is matured, or the crop will fall short. To do this work properly, turn your potato land in the fall, again as early in spring as possible, cross-plow with the subsoil or trench; manure broadcast, compost is best, charcoal, animal and street manure, ashes, sea sand, lime, soot, &c.; add to this as much vegetable and barn yard manure, and put fifty ox cart loads to the acre, and well attend your crops while growing, and you may expect to receive a full reward and no disease. Some will say ' my land is worn out;' this is oft times a fact. Then, again, I say, till and dress, for where the lands have been longest under cultivation, and most labor bestowed with good judgment, there are the best potatoes and best crops. If our wages are high, and we cannot work quite so close as in Europe, we can take the broad field culture, and the advantage of two hundred and forty-eight years of experience with one or two yoke of cattle and subsoil plow, will equal any of our wishes.

I will refer our farmers to last summer's dry weather; where lands were not tilled, it was as dry as though rain had not been upon it for years, and when the plow was kept constantly at work, the moisture was retained, the lungs, fibres and tubers fed, and a full crop obtained. And here I do not wish to leave you, for all esculent roots naturally require their soils tilled deep, to allow the frost, sun, wind, air and all other natural elements, with summer and winter fallowing, to cause a wholesome, good and full crop; and by strict adherence to labor and to nature, you may raise any quantity a rea-

sonable man may desire. And as crops of the above are invaluable for all farming purposes, particularly in wintering cattle, you can bring them out in spring to fill the pail, or bring down the scale. Your yard will be filled with manure, ready for any crops you may apply it to.

FEED FOR COWS.

An intelligent gentleman suggests the following: Sow your corn broad cast, cut it when the ears begin to set, to be cured, and when used, steamed; when properly steamed chop it up fine; mix with two quarts of Indian meal to the bushel; give a little hay twice a week; and, as cows like a change of food, give them once in a while, potatoes cut up, (always cut them,) put a half pint of ground salt upon a board for them to lick, once a week. Wash the cows all over once a week; curry and brush them well three times a week; keep them in dry airy situations, not exposed to sudden changes of weather. If you wish to have the corn for fodder, you must take great pains with it, for it is hard to cure. If you can afford it, have a tight room, fill it with the cornstalks, and steam it with steam from a boiler; that will cure it perfectly and make it a first rate feed for cows, especially as regards their milk. A man who keeps many cows may afford to steam the cornstalks.

It would be a profitable business for a person to sow corn broadcast, cut it just as the ear begins to set, carry directly to a dry chamber, where layers of poles of sufficient strength to bear a layer of cornstalks about two feet thick are laid over each other, so that the several layers may be kept apart for steam to penetrate the mass thoroughly; thus fill the chamber (say about 12 feet square.) The steam boiler might cost an hundred dollars, and the expense of fuel and attendance would be trifling; a man may thus cure a ton a day, the stalks being brought to the chamber in proper sized bundles.

The boiler can be applied to the steaming of roots, hay, or any other thing requiring steaming or boiling. After the cornstalks are properly steamed, they must be spread to dry immediately, in some convenient place out of the reach of the sun; when thoroughly dried, then cut it up by the best cornstalk cutting machine; send it to market packed in flour barrels or other casks; these will be handy to sell by retail, for persons keeping a single cow. The milk from such feed will be pure and delicious. There can be no garlic or onion in this feed.

STATE OF AGRICULTURE IN GEORGIA AND SOUTH CAROLINA.

The following condensed view of the state of agriculture in Georgia and part of South Carolina, has been communicated by Dr. Whitten, Hancock county.

On our upper table lands, we obtain an average of from fifteen to twenty bushels of corn an acre. Along our creeks and water courses we get thirty or forty. Our lands are generally poorly cultivated, by a people who do not aim at a permanent settlement, but are looking to removal to new lands. We have very little sod among us. Corn, has heretofore been with us but a secondary crop; cotton, tobacco and rice, have occupied our farmers. Ten years ago I selected for a farm, a worn out, exhausted, red, washed place. By cultivation I now get 25 bushels an acre off it. We are improving our agriculture; we use much cotton seed for manure, about seven bushels per acre, put in the drills or in hills. We have established Farmer's Clubs in every county of Georgia. I have known ninety-seven bushels of shelled corn raised on an acre, in my county, Hancock.

We are bringing much of our good forest lands into cultivation; some of them give 35 bushels of corn per acre, others 25. We place much reliance on green crops, oats particularly. Our native crab grass, when in seed, we plow under, and find it to be very fertilizing. Our corn is the gourd seed, and the gourd seed flint kinds; we cultivate your early varieties of corn for the table. The pea, called the cow pea, we plant in our corn fields. We plant the corn in February or March, and in May, when the corn is well grown, we plant this pea, and it climbs the corn stalk without injury to the corn. Experiments have been made in subsoiling our land, and great benefits experienced from the operation; one signal advantage is, that it protects our crop from the damage of severe drought; we have not tried plaster to any extent; we have green sand marls produced from decomposed rocks; the green sand of Jersey is a secondary formation. Attention is being drawn to our marls for manure; much reliance is placed on ashes for corn and wheat. Clover grows excellently with us, but is very liable to be destroyed by our heat or drought, our crab grass will get ahead of it in our fields.

DOMESTIC WINES.

From a communication on the subject of domestic wines, by the Hon. Mr. Terrill, of Georgia.

"I have in Georgia, an acre and a half of Scuppernong grape vines, a single vine has covered an acre, and if not disturbed, one and a half acres. Vines are trained on frames. Mr. Ponce, a neighbor, makes wine of these grapes, which resembles Champaigne. No brandy is used in it; it is very pleasant wine. It is said that this grape is named from a creek at Pamlico sound, where a vessel being wrecked, seeds of this grape were washed on shore and there began to grow. A method of making this wine, is pressing out the juice and adding to it apple brandy, about ten per cent; add also a little loaf sugar. We shake the vines so that the ripe grapes fall into sheets spread to catch them. We make wine from a wild grape, which is somewhat like the Muscadine, and of other wild grapes. The odor of the Scuppernong grape is highly agreeable and powerful, filling large rooms. One gentleman is making very good brandy from grapes, imported stock, as well as native. Some suppose that our Warren grape was originally imported; it is named from Warren county, Georgia. I think it is a native grape. One of our difficulties with the Scuppernong, is the pruning of it. We must be very careful; it must be pruned in November, at the fall of its leaves, otherwise it is injured much, if not fatally. The culture of the Warren grape is extended all over our country; it ripens later than the Isabella; we do not like the latter much, in Georgia."

Translations from Foreign Periodicals.

By Henry Meigs, Recording Secretary of the American Institute.

ARRACACHA.

This plant belongs to the umbelliferous family, and from its partial resemblance to celery, the Spaniards of South America have called it apio. It is probably originally from the Andes of New Grenada, where it is much cultivated. From the temperate levels of Cundinamarca, its culture has been extended beyond the equator, being now established in the Andes of Popayan and Los Pastos. At about the same period, the potato left the cool regions of Chili, and being propogated from south to north, following the Incas in their conquests, fixed at Quito in Peru, before it penetrated New-Grenada.

And it is a curious fact in the history of the food of man, to see in South America, maize (Indian corn) cultivated by small numbers of people at first, and also other important articles of human food; afterwards attain so advanced a civilization. Thus the arracacha cultivated by the Muyscas; the potato, propagated by the Incas; cocoa, by the Mexicans.

Behold now the the maize (Indian corn), the potato and the cocoa forming the basis of the nourishment of America and Europe. [Cocoa is almost indispensable to Spain.] The arracacha has not yet entered into our culture.

Monsieur Goudot had observed its cultivation during twenty years he resided in New Grenada. The arracacha is planted by cuttings of the root, each having a part of the sprouts. The roots must be dug up just before the flowering season, and they are of an irregular figure, weighing from 5 to 7½ pounds each. The weight of a good crop, at Ibague, was about twenty tons per acre. It is not quite so nutritious as the potato, for although in equal weight, it contains the same proportion of starch and albumen as the potato, yet it has more humidity.

POTATO ONIONS.

On the culture of onions in Russia, from the imperial Economical Society of St Petersburgh, by Mons. Sailtet.

The weekly Journal of Mussehl, reports the method of cultivating onions adopted in Russia, which consists in cutting the onion into four parts, leaving the quarters united at the root, and the onion having been first hung up and dried in smoke. For want of fresh onions, the smoke dried, still full of sap were quartered down to the roots, and being planted, each produced four fine onions, each of which had its seed stalk. It seems this mode is unknown out of Russia. The onion thus treated is not that from seed, it is the potato-onion.

Baron Foelkersahm, a member of the society, thinks it his duty to state, that he has on his estate, followed this method for thirty years, and has constantly had abundant crops.

LIGHT AND VEGETATION.

Effects of Light and Shade upon Vegetation, by A. POITEAU.

Vegetables are invested with their colors by chemical combinations favored by light and warmth. Red is produced by the direct rays of the sun on fruit—leaves are tinged when they begin to decay. The green color of leaves and bark is caused by light. Carbonic acid is the principal nourishment of plants. It is composed of oxygen and carbon—it exists in a gaseous condition in water, earth and atmospheric air; vegetables are very fond of it, they inspire it, with water through their roots, through the pores of tender bark, and through their leaves, with the humidity of the air. But as they can be nourished only by carbon, they are obliged to decompose the carbonic acid in order to acquire the carbon and to reject the oxygen. Those plants which have the deepest green color, decompose the carbonic acids best.

It is by means of light that they thus decompose the carbonic acid—for when plants are placed in obscurity, they only disengage it, but do not decompose it, thus rendering the air about them unhealthy for man. It is believed the violet ray decomposes it less than the white light.

Shade is necessary for all plants in their infancy, or when they are diseased, or when they have suffered violence by removal.

Seeds germinate best in obscurity, and are best when shaded for a few days after. The clouds furnish shade often, but art uses means to give shade to them. Seeds that must be sown on the surface or with little earth over them, grow best if shaded for a time.

Shade is necessary for such flowering plants as are desired to prolong their flowering and freshness. Shade is important to all plants in slips, it is almost indispensable in order that they may root well: plants in light, purify the air by absorbing carbonic acid and disengaging the oxygen, and they corrupt the air at night by suffering carbonic acid to escape without being decomposed.

ROSE GARDEN.

From Annales De La Societe Royale D'Horticulture De Paris.

It is now nearly three thousand years since the rose was first called *the Queen of Flower's.* I fear not to say that, none of the ancients, not even the Greeks or the Romans, knew truly the merits of this delicious production of nature. Even we, until within the last fifty years, were very far from knowing the value of Roses. At a late date we had but quite a small number of Roses, of little variety in form and color, in our gardens. There was not among them any to be seen of those varied shapes and splendid colors which have recently been produced by an intelligent and careful culture. And those beautiful flowers were transient—the bloom of only a single season, so that we were entirely deprived of them for the greatest part of the year. There was but one rose, which was vulgarly called the *Rose of Four Seasons,* which occasionally gave its flowers in the Autumn, but that was very precarious. Now, however, the whole face of things is changed. Roses have been multiplied in kinds and colors by planting their seeds repeatedly, and by a more knowing cultivation; exhibiting now more perfect and diversified varieties of an infinite variety of shades of color, of perfume, and blooming at all seasons of the year. The ancients called their Rose Gardens, Rosaria.

Monsieur *Loiseleur Deslongchamps,* who visited the Rosaria of Paris and its environs, says, that he had examined that of M. Victor Ver-

dier, who has been nineteen years engaged in the culture of Roses, and has now annually from twelve to fifteen thousand Eglantine (sweet briar) stocks grafted with all the most precious kinds of roses, among them many raised from seed. He has 1500 varieties of roses.

The garden of Mons. *Gau'hier* contains 75,000 Eglantines engrafted with roses, of which 6,000 are choice. These eglantine stocks are about forty inches high, with the roses engrafted on their tops, and the ground is every where covered with strawberries, chiefly the Alpine. Among the roses are those fine kinds from the Isle of Bourbon.

Mons. Jacques, chief gardener of the king, at Neuilly, has planted a great many rose seeds and obtained many very fine varieties. He sowed the seeds of the rose of Bengal, from which we now have roses called of the Isle of Bourbon. He plants rose seeds every year.

PRESERVING VEGETABLES.

Monsieur Masson, Gardener of the Royal Society, presented cabbages leaves dryed and prepared for keeping by a process of his invention. These will keep perfectly good on the longest voyages, and when cooked, almost resume their fresh condition, and will be of great value as anti-scorbutic.. Also radishes, turnips, spinach, chiccory, sorrel and some other plants, treated in the same way.

MUSHROOMS.

From the transactions of the Royal Horticultural Society of Paris. Report by the President, Viscount Hericart de Thury, on the culture of Mushrooms.

An important branch of our Horticulture is the cultivation of the mushroom. Great increase in their production has taken place in a few years. They were formerly cultivated in beds in the open air, but the frequent changes of weather and temperature being unfavorable to their growth, some gardeners undertook to grow them in cellars where the temperature was more uniform. They were completely successful. At the beginning of this century a gardener by the name of Chambry, having remarked that good mushrooms grew in

an old quarry gallery, tried the culture in it with great success. The abundant crops soon went by his name, Chambry mushrooms.

This mode being followed by others, there are now sold in the market three millions of small baskets of mushrooms. The quarries of Irry, of Grand and of Petit Montrouge, furnish the best and the greatest quantity. These mushrooms are sent into the country in large quantities. Mons. Noaillon distinguished himself at the late Horticultural exhibition by bringing to it daily fresh baskets of very fine mushrooms.

At the late exhibition there were exhibited almost seventeen hundred choice vegetables, and fruits and flowers of different kinds.

METHOD OF PRESERVING APPLE TREES FROM INJURIOUS INSECTS.

From the Revue Horticole of Paris.

Having devoted myself for three consecutive years to searching for the causes which destroy so large a number of our Elms and cider apples-trees—and after having operated by a process of my own, upon more than twelve hundred of these afflicted trees, of all ages and sizes, I believe that I have attained results so satisfactory that the Academy of Sciences should permit me to communicate the following observations: (I am engaged in a more extensive memoir on this subject.)

The diseased trees in question, owe their deplorable condition to the interception of the descending sap by the larvæ of the insect, *Scolytus destructor*, sub armatus et multistriatus, accompanied with the *cossus ligniperda* for the Elms, and those of the *Scolytus pruini*, accompanied with the *Calidium* for the cider apple-trees. Of those of the *Hylesinus crenatus* for the *Ash-tree*, *Fraxinus Excelsior*, &c., all tending to disorganize completely the inner barks of the trees, until death takes places.

The *Scolytus* and *Cossus* attack the Elms in large towns and cities where we readily believe their are causes predisposing to this injury. But they also attack the Elms in the country, where they are in the very best condition to flourish. This disease which has struck so many Elms and which threatens almost to exterminate them from our

plantations, in a short period of time, is due almost entirely to the propagation of the larvæ of the Scolytus, which have so greatly increased within the last twelve or fifteen years, that it would be difficult to find to-day within the circuit of Paris, or even in the entire department of the Seine, a single tree which has not been attacked. The larvæ of the Cossus deeply wound the ligneous parts of the tree, without too much endangering its life.

The simple taking off in parallel strips, longitudinally, the old bark, down to the young bark, (where the seat of the evil is) (you must not go down to the Liber,) from all the large branches as well as the trunks of the Elms, Apples, Ashes, &c., making from two to six strips according to the size of the trunk or branch, is sufficient to completely purge the tree of the larvæ which infest it and will regenerate, not only the infested bark of these branches, but all the bark. Experience has proved to me that trees, especially Elms, entirely deprived of their old bark, can sustain the greatest cold and drought without any unguent—that of Saint Fiacre or any other whatever. This is an economical and certain method; the old bark is worth something for fuel or may be used mixed with oak bark for tanning.

I make the incisions on the large branches as high up as possible towards the sources of the descending sap. This decortication or taking off the old barks, perfectly destroys the larvæ of insects, and also remarkably augment the production of wood in the stationary trees that are stunted, (rabougris,) such as elms and oaks. Now, admitting that in Paris the longest elms of seventy and eighty years of age and the middle sized ones of thirty or forty years old, produce annually, the first a woody circle of from one to two millimetres thick, and the latter from two to five, the trunks of such trees stripped entirely of their old bark, formed the first woody circles of from four to five millimetres thick, and the latter from six to eight millimetres. This remarkable increase I observed to continue in the same proportions the following years. This process will restore fecundity to old fruit trees.

This operation is not new, but it has fortunately been much extended. Knight says that apple-trees which he had partially barked, not injuring the tender inner bark or wood, had gained a diameter in two years more than in twenty years before.

ON THE CULTURE OF THE GARBANZO OR CHICK PEA.

From the Transactions of the Royal Horticultural Society of Paris.

The Garbanzo is the chick pea of Italy, and the southern provinces of France. It is the cicer sativum of Tournefort, and the cicer arietinum of Linnæus, who classes it among the Diadelphia Decandria.

The garbanzo is like the other plants of the same genus—a feeble plant, having but little root, but its branches are numerous. The color of it varies according to its species; there are white, reddish, and gray ones, and the color of the pea is the same as that of the plants. Each pod contains but one pea, or at most two. The pea is pointed on one side, and resembles a sheep's head. The best sort of garbanzos is described in Castile, in this way—they say that it has the countenance of a wrinkled old woman, the broad shoulders of a porter, and the beak of a parrot.

We ought to say that the garbanzo ought not to be white, but whitish; it ought to be light, tender, and large. They put one in the mouth to try the quality of them, if it softens quickly, they say it is good. Many kinds of it are cultivated in Spain, Portugal, and Italy. It has been introduced into the South of France. This pea is not very fond of hot climates. The best in Spain grow in the districts north of Fuente Lanco, Mendrida and others. I speak from experience. We sow them just as we do other peas in the field or garden.

The stalks of this pea, when dry, are good forage for cattle. It is best to give to them in their stables to save the manure.

It is particularly good for sheep, lambs and horses. It is regarded in Spain as a very valuable crop.

FARMERS' CLUB.

January 20, 1846.

POTATOES.

Nathaniel Sands, Esq., of New Windsor, Orange county—I will state my experience in raising potatoes. I have found that in planting them as early as possible I have good crops. The tops perished in August. I let the potatoes lie in their hills till September, and had perfectly sound ones. I have seen some disposed to decay, upon which I put lime, and these were saved from further rot. A neighbor of mine had a pond, from which he let the water flow upon his potato field in dry weather. For ten years past he has had always sound potatoes. They are of a fine quality. To prove the efficacy of this watering of his potatoes, he had another field which was left dry, and there his potatoes rotted. There are many fields which may be selected for potato planting, so situated as to admit of such watering.

Mr. Wakeman.—From the examination which I have made of this subject, early planting cannot be altogether relied upon. Some late planted crops were good, while the early ones were rotted. A good crop seems to demand all the benefits of a favorable season.

Mr. Sands.—In 1843 I first noticed this disease. I took pains to procure tubers from sound crops. I planted them very early; they grew well and kept sound. Those which I planted in April were good. Those I planted on the 25th of May proved nearly all diseased. By my mode, we seldom now have a diseased potato, and generally speaking, those planted late prove to be good.

The tops of my potatoes totally died in August, but the potatoes kept well in their hill till dug in September. What I call late planting is late in June. I do not let my planted potatoes be in immedi-

ate contact with the manure in the hills; I find that when the rain comes and soaks through the soil and manure, the potatoes do better than when in close contact with the manure.

Mr. Haff.—One word on a mode of planting potatoes for very early crop. I cut off the crown of the potato, (where the most eyes are) about one quarter the potato; these I put in boxes at this time of the year, with earth about as deep as we commonly plant them. I eat the other parts of my potatoes. These crowns put out roots; begin to vegetate, and as soon as I can set them out in the open air, I do so, and have potatoes from them for my table by the middle of June, nearly one month earlier than common.

Electricity to Vegetation.

The following is extracted from Martin's General Magazine for 1755, p. 116.—By JOHN TRAVERS, *of Osceola Point.*

"As it is our professed design to improve every discovery for the public good as far as we are able; and as electricity is now well known to be somewhat more than a matter of mere curiosity, inasmuch as it has been applied successfully to the cure of many disorders of the rheumatic and paralytic kind, and to remove obstructions and pains occasioned thereby: also it is known to promote vegetation in plants, and doubtless may be found of use in many other cases if it were applied in a proper manner; I mean so that it might be applied constantly or perpetually, and not momentarily and irregularly, as in the common way of using it, for if such surprising effects are produced from its sudden, and as it were, single action, what may we expect from continuous action or influence of such a powerful agent, that is to say from a perpetual electrification of animal and vegetable substances.

"In order to assist in such an undertaking we here propose a machine," &c.

Then follows a plate representing a fruit and flower garden with an electrical apparatus, which consists of a shaft working vertically by the application of a small stream of water on two glass cylinders with cushions to be adjusted properly, and communicating wires to the fruit and flower garden, which is a large insulated wooden frame.

Judge Livingston.—Presented Isabella Grapes which he has preserved by enclosing them in air tight glass jars. They were tasted by the members and pronounced very good.

Alexander Walsh, of Lansingburgh.—A letter from him was read stating the propriety of trying as a substitute for potato, the South American Arracacha, a root partaking of the nature of carrot and potato.

Mr. Meigs—Put the following questions relative to the

Culture and Manufacture of Flax,

to Mr. Billings from Missouri.

1st. What kind of soil shall I choose? and what manure?

Where there is most lime. On our best Prairie land we add twenty bushels of lime to an acre; the lime should be first slaked. Use also good well decomposed manure.

2d. When and how often and how deep shall I plow it ?

Plow as soon as the crop is off the field in the fall; plow deep, and if necessary use the subsoil plow, so as to plow twelve inches deep. Then in the spring plow four or five inches deep.

3d. When and how shall I sow the seed—broad cast or in drills; and how many bushels to each acre?

As soon as the land is plowed in the spring; harrow it lightly, and sow two and a half, to three bushels of seed; then harrow well.

4th. How shall I keep the crop clean?

The crops keep clean of weeds by the close thick growth of flax.

5th. How shall I gather the flax, and at what time?

Cut the flax with a cradle having a scythe from eighteen to twenty-two inches in length. Cut as soon as the blossoms of the flax begin to fall.

6th. How shall I secure the crop when gathered? what quantity in a bundle?

Let the flax lie on the ground until it wilts. In fair weather it may lie there thirty-six hours. Wet weather must be avoided at this time, if possible. Bind up as much flax as a whisp of flax will bind in one bundle. Shock it on the field so as to prevent wet from getting into it. Do not stack it. Leave it in the shocks for five or six days. When the weather is favorable, and it is about as dry as you would have your hay or oats, then house it.

7th. How long can I keep it before it is sent to market?

Fifty years! The flax is improved by keeping it a year. The gluten which is in it, then dissolves more readily when you come to rot it.

8th. Is it worth my while to rot it on my own farm?

No; you cannot make so good a profit by doing it.

9th. Is it worth my while to have a machine for dressing the crop?

If you can raise two hundred acres of flax, then you can afford to rot and dress it. One hundred acres will not pay a sufficient profit.

10th. What is an average crop of flax in the United States per acre?

About two hundred pounds to the acre if you let it all go to seed, but four hundred pounds if you gather it in the blossom. Ireland averages five hundred and fifty pounds an acre on one hundred thousand acres.

11th. Do you know how much it will cost to raise it per acre?

Twelve dollars an acre when housed.

12th. What is the cost of dressing it? How much can one of your dressing machines prepare in a day?

Three cents a pound from the stack to the bale press.

One of my dressing machines with seven men, will dress in one day, six hundred pounds of flax, and so much less tow is made by it that it saves twenty per cent of the flax by my operation. And the same process answers for hemp. Flax when rotted in water, heated

to ninety degrees, Fahrenheit, is done in three or four days. In raising flax, a part of the field should be sowed thin for the seed. Common Flemish and French dressed flax imported into England for forty years past, brings them from four to eight hundred dollars a ton. The difference of value is owing to the difference of qualities, which are assorted.

Mr. Wakeman.—Can flax and hemp be grown for a series of years on the same ground, or is rotation necessary?

Mr. Billings.—I have known hemp to grow on the same field perfectly well for twenty years in succession. The hemp crop is from seven hundred to nine hundred pounds an acre. I add lime to land for flax crop, but not for hemp. When flax is not allowed to go to seed, it does not exhaust the soil half as much. It exhausts about as much as the wheat crop. Our corn and wheat in Missouri certainly exhaust our soil. We have already found the necessity of deep plowing and subsoiling the land. It is better and cheaper by four to one, to cradle flax than to pull it by hand in the old way. We do not consider the rotting and dressing flax an unhealthy business.

Dr. Underhill, of Croton Point.—It is exceedingly important to establish the culture and manufacture of flax in our country. For the last twenty-five years Ireland has used the water rotting process; they pulled their flax before it went to seed. They have depended on the United States for their seed, for the last half century. We supplied almost all their flax seed for sowing. Dew-rotting is apt to weaken the fibre and render it less fine. They used to put their flax into still water where it rotted in from seventeen to thirty days. Dew-rotting requires some three months. Some lay the flax on the snow and let it remain until spring. A very bad plan. The flax is liable to great damage from cattle getting among it—it is very unequally rotted and liable to become dirty—it loses its softness and fineness of fibre. The operation of cradling flax is an important one—you get rid of the roots of the plant which are injurious in the dressing of the flax. I believe it would be profitable to raise flax, cut in blossom, and water rot it on the farm, at least until Billings' new plan can be found convenient to the farmer. Cotton is now whitening the ocean in the form of sails; cotton is displacing linen in many ways. Our country is fast being filled with people—we must have profitable employment for all hands. We have climates for Tea, Coffee, Grapes, Plantains, Bananas, Yams and every good

thing, independent of the whole world. We must bring our country to that natural position to which it is entitled.

Mr. Billings.—We have exported hemp to Dundee.

Edwin Williams.—We raise about fifty thousand tons of hemp per annum.

Dr. Underhill.—In 1844 our western country raised forty-five million pounds of it. They made the bagging and ropes for about two million and a half bales of cotton. Two vessels left New-Orleans for England last year, loaded with American hemp. The culture of hemp is increasing among us.

Edwin Williams.—In 1844 our import of cotton bagging was but one million six hundred thousand square yards. Many important articles of our trade are not well noted or distinguished from masses, in our tables of import.

Imports of Flax and Tow into Great Britain in 1842.

1,145,759 cwts. or 57,287,19 tons, at $10, -------	$11,457,590

Value of Linens Exported.

Yards,-------- 69,232,682,----------	£2,217,373
Linen Yarn, lbs. 29,490,987,----------	1,025,551
Total,----------	£3,242,924
Equal to,----------	$15,566,035

Linens Imported into the United States

For the year ending June 30, 1844,----------	$4,592,826
Sail Duck,----------	350,317
	$4,943,143
Exported, ----------	152,898
Home consumption, ----------	$4,790,245

Flax Seed Exported.

	Bushels.	Value.
1830,	115,762,	180,973
1831,	120,702,	216,376
1832,	57,537,	123,036
1833,	117,292,	228,300
1834,	187,468,	281,990
1835,	228,563,	451,886
1836,	123,926,	250,182
1837,	33,147,	50,553
1838,	35,651,	55,954
1839,	66,781,	161,896
1840,	76,970,	120,000
1841,	32,243,	50,781
1842,	18,354,	34,991
1844,	15,006,	23,749
1845,	50,000,	81,918

Imports of Flax into the United States.

	Cwts.	
1830,	5,850,	$39,055
1831,	463,	6,472
1832,	1,837,	16,194
1833,	996,	8,656

We find no later returns of imported flax.

Flax and hemp raised in 1839 in the United States by the census of 1840, 95,251 tons.

Great Britain.

The bounties on the exportation of linen and several other articles ceased in 1830. In 1829 they amounted to £300,000, or nearly $3,000,000.

Of 936,411 cwt. of flax and tow imported into Great Britain in 1831, there were brought from

Russia,	623,256 cwt.
Holland,	128,231 "
Prussia,	101,729 "
France,	55,324 "
Italy,	1,415 "
Australia, &c,	15,275 "

Of 2,759,103 bushels of flax seed imported in 1831 into Great Britain, there were brought from

Russia,	2,210,702
Prussia,	172,099
United States,	106,294
Italy,	105,448
Egypt,	98,847
Holland, &c.,	53,738

The duty was 1s. per quarter, or 3 cents per bushel, and the price in December, 1833, varied from 45s. to 54s. per quarter, or $1.35 to $1.62 per bushel. It is now admitted free of duty.

The quantity of linens exported from Ireland to Great Britain and foreign countries in 1825, was 55,113,265 yards.

Scotland.

During the year ending May 31, 1831, there were imported into Dundee, 15,010 tons of flax, and 3,082 tons hemp, and there were shipped

366,817 pieces, or	50,000,000 yards	Linen.
85,522 "	3,500,000 "	Sail Cloth.
About	4,000,000 "	Bagging.

In all about 57,500,000 yards. In the year ending May 31, 1833, the imports of flax amounted to 18,777 tons, besides 3,380 tons of hemp. The shipments of linen, sail cloth, &c., have increased in a corresponding ratio, and were valued in the same year, at about £1,600,000, or about 7½ millions of dollars.

It appears, therefore, that the shipments of linens from this single port of Dundee are quite as great as those from all Ireland; and while the manufacture has been very slowly progressive in the latter, it has increased in Dundee even more rapidly than the cotton manufacture has increased in Manchester.

The same authority, Mr. McCulloch, estimates the entire value of the linen manufacture of Great Britain and Ireland at £7,500,000, or 36 millions of dollars. One-third part of this is estimated as the value of raw material, and 25 per cent for profit, superintendence, wear and tear of machinery, coal, &c., leaving £3,125,000, or $15,-

600,000 to be divided as wages among those employed in the manufacture, estimated at 172,000 persons, earning £18, or $86 per annum each. The consumption of foreign linens in Great Britain is quite inconsiderable, not exceeding £20,000.

Judge Van Wyck.—I fear the culture of flax will not repay the farmer, if it is conducted as it has hitherto been done, for fifty years past. Too much labor, too much cost in getting it prepared and sent to a proper market. The price of seven and a half cents to twelve and a half cents a pound will not remunerate the producer. The most which can ordinarily be raised—if for the lint only, is about four hundred pounds the acre—if raised for seed only, two hundred pounds. The capital employed, consisting of land, in our part of the country worth one hundred dollars per acre. Animals and tools $50; labor and dressing, and getting to market—altogether say $200. While the price averaging but ten cents a pound, will not remunerate the farmer. Perhaps on rich western lands it would pay, but not in our quarter, where grazing and raising of bread stuffs is far more profitable. Grain crops cost us nothing like the labor and expense of flax. Flax must be raised, puffed, housed, rotted, dressed and go to market with much delay and expense. You cannot persuade our farmers to raise flax, unless you show it to be profitable; and they know what is for their best interest to produce. England had to abandon the culture of flax in favor of grain and cattle, although the government gave bounties by way of encouraging the flax culture. It will never do in the Northern States, unless some revolution is effected in the culture, dressing, &c. If by machinery the difficulties can be overcome, then it may answer.

Dr. Underhill.—It is not intended to recommend the culture of flax after the old method, but on rich soil. When cut in the flower by a cradle, instead of hand pulling, &c., this is an entirely new plan. We speak of the culture for the United States; and in the rich soils of the country west, Arkansas, &c. The crop of flax does not when cut in the flower, impoverish land half as much as when allowed to go to seed, and gives a double crop of the flax, and so much finer is the fibre, that it is worth fourteen or sixteen cents a pound. The machinery of Mr. Billings' can dress the flax for three cents a pound! and by cradling, rotting and dressing in the manner Billings does it, almost 20 per cent more of flax is made than was made by the clumsy old method. And the quality of the fibre far superior; silky and beautiful. Hemp is peculiarly fitted for the rich

lands of the west. I exhibit to the club a specimen of the Agave hemp from Yucatan. Dr. Perine brought this article into notice.

This hemp is the strongest in the world for ship's cables. But common hemp is becoming very interesting as a crop in our country. Forty-five millions of pounds were raised here in 1844. A pamphlet issued by a distinguished citizen of Kentucky greatly contributed to this most valuable result. Hemp is now cradled when green.

Judge Van Wyck.—It is admitted in Europe that flax although pulled when in the flower, yet exhausts land more than grain crops; but when it goes to seed it becomes a scourge to the soil. Not so with hemp, of which twenty crops in succession can be produced on the same land, with but little manuring, and the last crop be perhaps a better one than the first.

Chairman.—One cause of the neglected culture of flax is cotton so agreeable and useful for apparel for the greater part of the year. As to hemp, there is no doubt as to our capacity to raise it. I do not think that hemp is so great an exhauster of the soil as flax.

It is a difficult thing to fix dyes in linen; the colors, notwithstanding the use of the known mordants, are apt to wash out of linen.

Mr. Wakeman.—Linen may be made a substitute for cotton to a certain extent. We now import linen to as great an amount, or rather more than we did forty years ago, but not so much in proportion to population. We can raise, say 448 pounds of flax per acre, Ireland raises upwards of 500. If ten cents a pound be the price, it is worth more than cotton raised upon an acre. Every thing in our country has been against linen. The duties began at 5 per cent on sheetings, &c., then went up to 12½. In 1812, they went up to 37½ per cent. A great many manufactories of flax were commenced, and were operating extensively. The double duty and the war caused that. After the war the duty was 15 per cent, while upon cotton it was from 80 to 100 per cent. On woolens it was 25 per cent. In 1828, linen was 15 per cent; hats, boots, &c., were at 30 per cent.

Our people must have proper inducement to go into the linen business, or they will never do it.

Flax is manufactured in Europe, into handkerchiefs, worth 3,500 per cent advance on its first cost.

Judge Van Wyck.—And cotton at 5,000 per cent.

Abstract of British Laws respecting bounties on Linen.

[*Act XXIX. George II. and X George III*]

British or Irish Linen, made of hemp or flax, of the breadth of 25 inches or more, for every yard which shall be exported to Africa, America, Spain, Portugal, Gibraltar, Malta, Island of Minorca, or the East Indies, there shall be paid a bounty

Under the value of 5d. per yard of,----------	½d.
Of the value of 5d. and under 6d,----------	1
Of the value of 6d. and not exceeding 1s. 6d,----------	1½
Checked or striped, not exceeding 1s 6d., and not under the value of 7d. per yard.----------	½
Diapers, huchabacks, sheetings and other species of linen, upwards of one yard English in breadth, not exceeding 1s. 6d. per square yard in value, the square yard,---------	1½
Sailcloth and canvass, fit for, or made into sails, the ell,----	2

Which said bounty shall be paid upon demand to the exporter of such linens, or the seller thereof for exportation, by the collector of the port from whence the same shall be exported. The exporter or seller for exportation, shall, before he receive such bounty, produce a certificate verifying the shipment thereof, and shall likewise give security to the collector of the port, in the penalty of double the value of the goods intended to be exported, and £100, that such linens or any part thereof, shall not be re-landed or brought on shore again in Great Britain or Ireland.

Mr. Bergen, of Gowanus.—I have seen much flax raised. I do not think it is now a profitable crop. After the farmer has raised his flax, and even spun it into thread, he can buy his cotton thread cheaper than he can get his thread wove into linen. Flax is no greater exhauster of the soil than many other crops. He constantly looks for the greatest profit. Now, sir, it is said that if machinery shall be introduced, the profit will be got. It may be so; but how are we to get it? There are many ways proposed for the encouragement of flax and hemp culture and manufacture.

Chairman.—I am for encouraging every profitable operation. No doubt exists as to the profit of raising flax on the rich lands of the west.

Mr. Wakeman.—With flax at 9 cents a pound, why cannot we manufacture linen? Linen keeps up in price, while cotton fabrics have fallen 75 per cent. Before long, probably we shall prepare flax for 1½ cents instead of 3 cents a pound, and improve in machinery. We ought not, at all events, to depend on foreign nations for that, or for any other necessary of life. There is no land in Europe equal to ours for the production of flax and hemp, viz: the rich alluvial soil of the west.

Dr. Underhill.—We have much to do if we undertake to supply our own domestic wants, for we import now some millions. We use now cotton thread. The linen thread is much the best and strongest and we cannot do without linen towels.

Mr. Fleet.—We have had a specimen of manufactured linen from the household of Dr. Crispell, of Ulster county. He does it all in the old way, and the articles are very excellent. I agree that flax is peculiarly adapted to the rich soils of the western country.

Judge Van Wyck.—Flax is now admitted free.

Mr. Abbott.—In Ireland they pull flax after the leaves begin to turn yellow at the bottom of the stem and after the flower is off, but before the seed has been matured.

Statistics of Flax Cultivation and Manufacture in Ireland.

Before the year 1825, the linen manufactured in Ireland, was made of yarn spun by hand. In 1829, some Irish capitalists at Belfast, embarked in the flax spinning trade, and built factories, which were soon followed by others in different parts of the north of Ireland. By the report of the Factory Inspectors, in 1830, it appears that the number of flax spinning mills then in Ireland, was 40; worked by 1,980 horse power—employing 9,017 persons. Since then it has increased to 62—worked by 2,860 horse power—giving employment to 13,600 persons; and adding the subsequent processes of manufacture, the number of persons supported by the Irish linen trade, cannot be estimated at less than from 500,000 to 600,000 in all.

The following table of linen exported from Ireland, taken from official returns, will show the increase of trade at various periods:

Year.	Yards.
1710,	1,688,574
1750,	11,200,771
1775,	21,502,000
1800,	35,676,908
1820,	43,613,218
1825,	55,113,265
1835,	60,916,592

Since 1835 the exports have increased in about the same ratio.

The continental nations engaged in the linen manufacture, still retained the hand spinning, but began to import very largely of the British and Irish mill spun yarns. In 1842 the French Chamber of Deputies increased so greatly the duties on these imports, that certain capitalists in that country were enabled to import machinery from England, to erect mills, and to realize, until the present day, very large profits on this trade. A large number of factories consequently sprung up in France, Belgium and Switzerland. The result has been, that the consumption of Irish linen has been kept down on the Continent, by the tax thus levied on the consumers.

The capabilities of Ireland for the manufacture of the finer qualities of goods, in this branch of industry, is shown in the speech of Sir Robert Peel, on the tariff. Before the removal of the duty, the manufacture of Irish cambric sold, as compared with French, was 100 to 1,000 dozens. In the next four years, from 1830 to 1834, the Irish manufacture was in the proportion of 300 to 1,000 dozens; from 1834 to 1838, as 900 to 1,000; from 1838 to 1842, as 4,000 to 1,000, and from 1842 to 1846, 16,000 to 1,000. All this was for the supply of the home market, as the demand had been sufficient to keep the manufactures employed without looking further for a vent for their goods.

The flax manufactured in the United Kingdom, divides itself into two sections—the one consisting of yarns exported to the linen manufacturing countries of the Continent, where they are wrought into cloth; the other comprising the yarn made into linens of all fabrics in Ireland, at Dundee, at Barnsley, &c.; bleached and exported to the markets of the world. In spinning the yarn to supply these two

great branches, there are now at work, in all, 414 factories, worked by 11,965 horse power, and employing 48,070 persons, involving a capital fully £11,000,000 to £12,000,000 sterling.

The quantity of flax consumed in these mills may be estimated in round numbers at from 100,000 to 110,000 tons per annum. Of this quantity, 60,000 to 80,000 tons are imported from Russia, Holland, Belgium, and other foreign countries, and the remainder principally grown in Ireland.

Coal as a Manure.

Roswell L. Colt, requests the consideration of the Club to the question whether the ashes of anthracite and bituminous coal are useful as a manure?

Dr. Underhill. It is important to decide, for the quantity of the ashes is great and greatly increasing. I have tried experiments with the ashes and found little benefit, except on my tomatoes, planted in a sandy, gravelly soil; on these the benefit was very striking; on other plants I noticed but little effect.

Mr. Meigs. Analysis shows that the ashes of the anthracite coal, is composed of some fifty-three per cent of silex, (flint,) and thirty-six of alumina, (clay,) some magnesia, iron manganese. On a clay soil, the silex would be useful; on a sandy soil, the clay would be so. Pure beach sand is well applied to clay soil; the benefit is chiefly mechanical. The particles form that degree of looseness in soil which permits the more delicate roots to penetrate. A very small portion of this silex (flint) is chemically developed in the external coverings of the stems of wheat, &c. This wonderful coat of flint, surpassing in its delicate formation all human conception, is necessary to defend the interior of the plant, and sand should be put upon and mixed with certain stiff clay soils, and clay upon the sandy soils.

Dr. Field. I have considered the coal ashes to be very worthy of notice. They have been neglected. They contain no article that is not useful, acting chemically as well as mechanically in the growth of plants. They are good absorbents of the gases from the air, and in kindling these coal fires, a large quantity of wood is necessary, the ashes of which, mixed as they are with the residuum of coal, are fertilizing. Thomas Addis Emmett, of New-York, uses coal ashes with great benefit to his soil, which is heavy wet, requiring drainage. He has a highly cultivated garden in which the ashes are used.

COMPOSITION AND CHARACTER OF ASHES.

From several varieties of coal, extracted from Johnson's Report on American coal as applicable to steam navigation. Congressional Documents, No. 386, page 559.

CHARACTERISTICS AND INGREDIENTS OF ASHES.	Sugar-loaf Company's Anthracite, Hazle Creek, 1st Specimen—Specific Gravity, 1.591.	Sugar-loaf Anthracite, 2nd Specimen—Specific Gravity, 1.574.	Sugar-loaf Anthracite, 3d Specimen—Specific Gravity, 1.55.	Buck Mountain Anthracite—Specific gravity, 1.559.	Summit Coal Company's Anthracite, head of Beaver Creek, 1st Specimen—Specific gravity, 1.613.	Summit Coal Company's anthracite, 2d Specimen—Specific gravity, 1.594.	Stevenson's Bluff Anthracite Beaver Creek—Specific Gravity, 1.612.	Salem Vein anthracite, Pottsville—Specific gravity, 1.569.	Quinn's Run, Bituminous Coal—Specific gravity, 1.372.
Per centage on ashes in coal,	4.83	8.73	2.252	3.079	5.04	4.00	3.71	6.75	6.80
Color,	Light buff.	Reddish white.	White.	Reddish buff.	Fawn.	Reddish gray.	Fawn.	Brick red.	Gray.
Silica in ashes, per cent,	53.603	45.105	43.68	45.60	54.50	50.25	50.05	50.00	76.00
Alumina,	36.687	37.000	39.34	42.75	34.55	38.90	39.04	38.90	21.00
Peroxide of iron,	5 590	13.000	8.22	9.43	7.50	8.75	8.75	8.00	2.60
Lime,	2.857	1.280	5.76	1.41	2.25	0.85	1.56	2.10	
Magnesia,	1.046	2.430	3.00	0.33	1.30	1.25	1.30	0.90	
Oxide of Manganese,	0.86								
Loss, per cent,	.....	1.085	.....	.....	.....	.....	.....	.....	0.40
Sum,	99 989	100.	100.	99.52	100.	100.	100 70	99.90	100.00

Dr. Underhill—The silex in soils is chemically dissolved by potash. The union of the two, form silicate of potash; very important to the growth of plants.

Dr. Field—Some time ago, I examined some muck in which I did not discover the presence of any lime.

Chairman—The most essential ingredient in soil is calcareous earth; no plant prospers without it.

Mr. Fleet—I think that coal ashes are useful mechanically. Mr. Colman recently remarked, that large tracts of land in Russia, in which the least possible trace of lime is present, are nevertheless fertile. That those tracts, after resting two or three years, are found again restored to their fertility. In Lincolnshire, England, where the soil is three inches deep and lying on chalk, much is found to be due to carbonate of lime for fertility. Colman thinks that the benefit of lime is merely mechanical, except where there is oxide of iron, and that is properly neutralized by lime. But after all our theory on the subject, facts alone should guide us in actual practice.

Chairman—In our limestone districts, lime is known to be of benefit and is always used as a manure. On argillaceous soils, lime is productive of fine effects. The marl of New-Jersey when applied to the sandy soils, produces the happiest results. Without lime, many lands become sour, producing little grass and much sorrel. Many farmers put too much lime on their land, and others not enough. In all these cases, we must judge by the results of the majority of cases, for all rules have exceptions, which however only prove their general truth. As to the Russian tracts, and the reasoning, they are very differently situated, perhaps, and we have no certainty whatever that what is true of them would be so in this far distant region. Why do our farmers prefer a limestone country? New comers in the west seek for such land.

Dr. Underhill—I have used much alluvial matter on my farm. These alluvial deposits vary much in quality. Some contain copperas (sulphate of iron,) and the fertilizing effects of these alluvials are not perceived for the first year, unless lime be mixed with them. When that is done, we have formed at the same time, real gypsum, (plaster,) which is a good manure. The presence of lime in the alluvial, at least prevents the injurious effects of the copperas. Some of the alluvials, perhaps, contain no copperas or any other acid

which requires lime to neutralize it. Shell lime is abundantly better than stone lime. I have put on my farm in one year, five thousand bushels of stone lime, upon sandy soil, without any great advantage, except where I had before put on alluvial matter. I have composted the alluvial by one stratum 6 inches thick, lime two inches thick, and so on to 6 or eight feet high; after some time I mix all the strata well together, pulverize the mass, and thus I make an excellent manure. Draw out the alluvial matter, let it have the winter's frost. It will be friable next year, and be good manure if you stir it well into your soil by plowing, &c. The copperas in it dissolves in the rains, and leaves the soil good, and on a hoed, and plowed crop, such as corn and potatoes, it shows well the first year, without lime. But if you add lime to the alluvial, you can make it good for manure in a short time.

I have put on my farm, over thirteen thousand loads of alluvial without lime, and after a little time, it has proved good for all my plants and trees. Our Boston friends must wait a year after their alluvials are put on their farms, before they will reap the full benefit of it.

Dr. Field—There are material differences in the qualities of muck. Our farmers ought to know what these differences are. Where running streams are passing through deposits of muck, the salts originally in the muck are necessarily dissolved and carried away by the water. Alluvial is different, it contains the remains of reptiles and other animals—much animal matter—and the presence of phosphate of lime, proves that of the remains of animals.

In composting muck, I make a layer of it one foot thick, cover that with two inches depth of stable manure, and over that one inch of lime. Do this in the fall or winter, leave it until spring, then mix the mass thoroughly. I have put upon an acre two hundred and fifty loads of forty bushels each, of this compost, with signal success to the after crops.

Dr. Underhill—On one vineyard of five acres, I have put 6,000 horse-cart loads of muck, at about 20 bushels the load.

Dr. Field—Last year I put gypsum and muck in my barnyard, to mix with the stable manure. In these composts, much depends on the play of chemical affinities; the gases are absorbed by some of the ingredients to a great amount, and thus retained for use as fertili-

zers. Farmers ought to try experiments on the small scale first, then go on the large plan, when all is certain of success.

Mr. Sheafe—I have used stone lime on my farm as a top dressing on meadow land, with beneficial results; but shell lime is much to be preferred. I am now engaged in experiments with lime and muck in combination. I have let the stone lime be air slacked in the fall, then spread with the shovel over the land, about in the proportion in which gypsum is commonly applied. My farm is on a limestone basis.

Diseased potatoes.

Mr. Hancock presented the recent observations of Prof. Liebig, on the method of preparing for keeping and for use, diseased potatoes, as follows:

The researches I have undertaken upon the sound and diseased potatoes of the present year, have disclosed to me the remarkable fact that they contain in the sap, a considerable quantity of vegetable casin (cheese) precipitable by acids. This constituent I did not observe in my previous researches. It thus appears that from the influence of the weather, or generally speaking, from atmospheric causes, a part of the albumen which prevails in the potato, has become converted into vegetable casin. The great instability of this latter substance is well known; hence the facility with which the potato containing it undergoes putrefaction. Any injury to health from the use of these potatoes, is out of the question; and nowhere in Germany, has such an effect been observed. In the diseased potato, no solanin can be discovered. It may be of some use to call attention to the fact, that diseased potatoes may easily and at little expense, be preserved for a length of time, and afterwards employed in various ways, by cutting them into slices of about a quarter of an inch, and immersing them in water, containing from 2 to 3 per cent of sulphuric acid. After 23 or 36 hours the acid liquor may be drawn off, and all remains of it washed away by steeping in successive portions of fresh water. Treated in this manner, the potatoes are easily dried. The pieces are white, and of little weight, and can be ground to flour, and baked into bread along with the flour of wheat. I think it probable that the diseased potatoes, after being sliced and kept for some time in contact with weak sulphuric acid, so as to be penetrated by the acid, may be preserved in that state in pits. But further experiments are necessary to determine this. It is certain, however, that the dilute sulphuric acid stops the progress of putrefaction.

March 3, 1846.

ANALYSIS OF COAL.

Mr. Wakeman—I present an analysis made by Dr. Chilton, of the ashes of anthracite coal. We have desired that analyses should be made of the ashes of the various coals now so generally used as fuel, in order to ascertain what value ought to be attached to them as manures or as useful to soils. The quantity of the ashes being great, we would, if they are valuable as applied to our soils, have it known, that they may not as many other articles of immense value to the farmer, be wasted. The following is Professor Chilton's analysis of Lackawana coal, viz.:

Silica,	45.00
Lime,	6.25
Alumina,	42.50
Oxide of Iron,	5.25
Magnesia, &c.,	1.00
	100.00

Analysis of the Ashes of Lehigh Coal.

Silica,	54.51
Lime,	3.63
Alumina,	38.00
Oxide of Iron,	3.45
Magnesia, &c.,	2.25
	101.84

Col. Clark—The analyses of coals exhibit some various results even in the same coal beds. They are generally, however, nearly uniform in their constituent parts.

Roswell L. Colt—I am told that Professor Liebig says azote that is in various grains, forming their nutriment is, for

Wheat,	2.17
Rye,	2 04
Oats,	1.96
Beans,	5.11
Kidney Beans,	4.03
Peas,	3.40
Barley,	1.76

And one writer estimates,

Indian Corn, at	1.50
Buckwheat,	1.40
Millet,	1.20
Rice, only	.80

Now I feel entirely confident that our Indian corn, in nutritive qualities, far exceeds in value for fattening stock even wheat. Can you tell me where I can find an analysis of this favorite grain ? If it has not been made, the American Institute ought to have this question determined, of what per cent. of nutritive matter is found in three or four most common kinds of Indian corn.

I am glad to find that you intend to let us know the salts found in white ash and red ash anthracite coal.

I am taking out 1,000 loads of black muck, say half peat—

Part I mixed with wood ashes,
Part with anthracite ashes,
Part with unslaked lime,
Part do do and wood ashes,
Part with soda ash,
Part with lime and salt.

I will let you know which does best; any or either will I am sure do well.

Professor Mapes—Mr. Colt assumes the popular error relative to azote. Liebig is said to have maintained that azote is an element of vegetable nutrition. This is not so. There is no nutrition in it. The only nutritives are starch and sugar. In the proportions of the gases constituting them, there is but a small difference in the quantity of the oxygen and hydrogen between the starch and the sugar. Starch contains no water of crystallization; sugar does. Distillers mix corn (sea maize) and rye in the mash-tub. By stirring, the rye sooner yields its starch and sugar than the corn, and thus the swill is found to contain nutriment for animals. But if they, the corn and rye, were separately distilled, the swill would not sustain an animal, for it would be destitute of both starch and sugar. Starch, when roasted, forms the British gum used in manufacture of cloth of cotton, &c. In fermentation, when slow, the oxygen, hydrogen, and carbon of starch, in that form, or in that of sugar, which it assumes,

differs only in one proportional part in form of sugar. Alcohol is the same thing, only the proportional parts are different. In vegetables the lignine, cellular structure, &c., only serve to divide the starch or saccharine in the vegetable into minute portions. This natural division is necessary for us who live on them—for otherwise they would be too much concentrated—we might eat without mastication, but our teeth would drop out from mere inactivity. Nor could we exist in good health without the lignine, &c. Barley is made to start its growth, (by distillers,) and as soon as it has developed in a light degree its growth, it is sugared, the growth is then stopped by drying it. Afterwards in using it, the sugar is dissolved—and after this, and then distillation, the swill will not feed a pig ! Starch exists in globules, and when moistened, swells and becomes sugar. And this saccharine process is going on in the processes of vegetation.

Pruning.

Dr. Underhill—The pruning of fruit trees has been wonderfully neglected in our country. I hardly ever take a ride but I see whole orchards in which the branches grow like a forest, one limb riding another, chafing in every storm, and so thick a growth as to exclude the light; limbs covered with moss, a very delightful resort for worms and insects, which can abide most comfortably there until the ensuing year! and then invade the leaf, the fruit and the tree! Moss roses are beautiful, but moss on the fruit trees a great injury.

Fruit trees, if old, still must be pruned; but the young ones ought to be, or the fruit will be poor, knotty and of little value.

The best time for pruning is the spring, when the leaves are out, and even the blossoms; but this doctrine is against almost universal practice. I have pruned in winter, because I had then spare time. Cover the cut limb with some composition to exclude wet, &c. Tar mixed with French whiting and a little common sublimate, makes a good compost for the purpose. The sublimate prevents the insects from meddling with it; the tar, however, will keep them off without the sublimate. Grafting wax, made of rosin, bee's wax and a little tallow, is good, but is more costly. This care prevents the tree from becoming hollow, causes the trunk to heal and grow over well. When you would prune off a limb of three, four, or five inches diameter, observe the bulge next the body of the tree; cut off the limb just outside of that bulge. Cut off the lower limbs so they may not interfere with the horns of cattle passing through the orchard, when

ploughing. In making fine fruit we want more root and less top! A tree so pruned is more healthy, lives longer. A man who understands the matter, can tell in a forest, by the limbs, where the roots are! The roots of the lower limbs lie nearest the surface of the ground, and these always suffer first in a drought. You will see it in apple, pear, plum, &c., the fruit on the lower limbs always suffer most from a drought. It is a curious sight in many of our neglected orchards, to see the suckers on the limbs, filling the whole tree with a mass of thick brush. These trees cannot have proper fruit. One cannot get into them to clear off worm nests; and a man that will not clear off these caterpillar nests I don't want to know. If he was the only man in the world it would not be quite so bad, but he provides an invading army of worms for all his neighbors. I destroyed on my trees last year about twenty thousand nests of worms. I have destroyed all for twelve years past; still my neighbors are plentifully supplied with them. Their butterflies come in thousands to my farm, as they fly for miles from their locality; they are very beautiful insects, but I object to their peopling my orchards with catterpillars. The culture of all good fruit is valuable near this great city; more valuable than other crops. The worms kill off one-half of our fruits, sometimes two-thirds. We must prune well, scrape off the moss and all the loose bark with a dull hoe or an iron, then wash the tree well with a solution of pot-ash, one pound to six gallons of water, or with soft soap so that it may even run down the branch to the ground, and then dose the vermin. The larvæ of insects are destroyed by these washings. Plough the orchard well; hoe well about the roots of the trees. I have never suffered from the canker worm while some of my neighbors had their orchards destroyed by them. Some of those orchards had not been ploughed for twenty years. Plough them every year, or at least every other year, or dig up the ground well around them. Orchards require manuring. I have tried many kinds of manure. The dung of the horse is best for apple trees, perhaps owing to the phosphorus contained in it. The bark of trees growing vigorously often becomes too tight, especially about the body of the tree. In such cases I cut incisions through it on the north side, not down to the wood, but through the hardest part of the bark. This relieves the tree. If this be neglected I have seen trees choked to death by that tightness of the bark. Make these incisions in May or June. Do this on apple, pear, cherry, plum and apricot trees. It should be done every two years at least. Some persons seeing the trees dead, said it was caused by blight; some said by lightning; but they were literally choked to death.

Mr. Tirrell—How do you apply the horse dung?

Dr. Underhill—I plough it eight or nine inches deep all over the orchard; do not place it nearer to the tree than one foot; let it be spread from six to ten feet diameter around the tree are in old orchards spread over the whole ground; as roots, all over. The small roots which take in nourishment are at the extremities of the roots.

Judge Van Wyck—What do you say as to tilling orchards?

Dr. Underhill—They should be tilled. Grow corn or potatoes where the trees are young, or turnips when old. I sow buckwheat in them and plough it in. But I never want to see wheat or rye, oats or meadow grass in an orchard; for unless the roots of the trees are kept clear for some distance, the grain crop in June or July, when there is any drought, depriving the trees of their necessary supply of moisture, the fruit will become gnarly.

Mr. Allen—Presented some fine large apples, the produce of trees on the farm of W. Mills, of Long Island, which had once been worm-eaten and mossy, but had undergone reformation.

Chairman—The walls of the sap vessels in trees easily close up, so that in old orchards we see almost uniformly hollow trees still bearing their fruit. If these trees had been properly pruned the trunks would have been of solid wood to a large size and old age.

Judge Van Wyck—One writer on this subject says that winter and summer are both proper seasons for pruning, because then the sap is not running. Prune off all scraggy crooked limbs, prune out the top so as to let in the sun's rays. As to peach trees do not prune them. My idea of pruning has long been in accordance with Dr. Underhill's plan. I should like to hear something from him, on the plum tree; there is often found upon it a blister, which is a disease. Would you amputate the limb?

Dr. Underhill—The Judge is right as to the peach tree. South of our highlands, plums are almost all destroyed. I know but one remedy. Make a hog pen of your plum orchard. The hogs will eat up and destroy the fallen fruit, insects and all; let the hogs be there all the plum season; they will rub against the trees and do them good. In that way you can have as good plums as in any part of the world. Some recommend paving the ground—then birds pick up the fallen insects. These insects do not fly far.

Mr. Maine—I am cultivating dwarf plum trees. I have a high close form around them—pave the ground and prune the trees immediately after the fall of the leaves.

Mr. Wakeman—It is with great pleasure and hoping for much good to grow out of it, that I now offer to the Club the following resolutions, the object of which is, the utmost extension and diffusion through our country of the finest of our fruits. If the exchange of fruit grafts contemplated by these resolutions shall happily be made, we shall at no distant period have the high satisfaction of an almost universal enjoyment by our fellow citizens, of the finest fruits. I trust and hope earnestly that the exchange of grafts may be far and wide, and that every farmer's club now in existence, and that shall be created hereafter, will consider themselves bound to carry into full execution so noble a practical good thing.

Resolved, That the production of choice fruit may be greatly increased by the interchange of grafts, cuttings, &c., and that members of this Club be requested to bring supplies of grafts and cuttings of the most valuable fruit trees to the future meetings of this Club, with the characteristics of each, until the season for grafting, and the setting out of cuttings is past.

Resolved, That it be recommended to all the Farmers Clubs in our country, to use their endeavors to promote an extensive exchange of grafts and cuttings, and to avail themselves of the present season for laying the foundation for an extended production of the best fruits throughout our country.

Resolved, That one copy of the proceedings of the National Convention of farmers, gardeners and silk culturists be sent to all the Farmers Clubs formed in our country, and that such clubs as have been, or may hereafter be formed, be requested to forward to the New-York Farmers Club of the American Institute, copies of their proceedings, to be preserved by the Recording Secretary with the records of the Club.

Clubs not supplied with the proceedings above alluded to are requested to give notice to the Secretary of the American Institute, New-York.

April 21st, 1816.

INTRODUCTION OF INDIAN CORN INTO GREAT BRITAIN.

We find that the introduction of this great American staple as an article of food is exciting considerable attention. The distress arising from the failure of the potato crops, the principal article of sustenance of the laboring classes, has rendered a substitute necessary. In point of cheapness and nutritive qualities, the preference has been given to the Indian Corn.

Too much praise cannot be awarded to Mr. Cowdin for the deep interest he has taken in this subject. Invitations were lately extended by him to a large number of gentlemen to an entertainment, for the purpose of bringing under their notice bread made in a variety of ways from Indian Corn or Maize. After a few prefatory remarks by the chairman, in which he argued the expediency of introducing that article as tending to increase and strengthen the intercourse between the two nations, Mr. Cowdin rose and stated " he had been influenced in giving the invitations, not with the view of any pleasure that would arise from the party itself, but from the important bearing the subject he had to bring before them might have on the business relations of the two countries. He spoke of the extent of the United States, embracing every variety of soil and climate, accompanying his remarks on its productions with complete statistics. To convince them that Indian corn meal was well adapted not only for the use of the poor and middle classes, but also for the opulent, several loaves were cut and distributed among the gentlemen. The corn meal of which they were composed cost $2\frac{1}{2}$ cents per pound, while wheat flour cost 4 cts per pound, giving about two loaves of corn bread to one of wheat. The company afterwards partook of a pudding composed of corn meal, suet and molasses. The bread was pronounced good—the pudding excellent.

The following is an extract from a letter of later date, received from Mr. Cowdin, addressed to T. B. Wakeman, Esq., and read before the Farmers' Club at their last meeting, wherein alluding to this subject, he says:

" I am, and have for some time, been devoting my leisure time, in endeavoring to introduce into this community, the great universal staple of America, ' Indian Corn,' about which the people here know nothing, and I am pleased to say, have succeeded in removing the deep rooted prejudice which existed, by frequent exhibitions of corn bread in every variety of form. It may now be said to be fairly and

permanently introduced into the charitable institutions and prisons of this city, which will give it a character and confidence throughout the United Kingdom of Great Britain, and consequently throughout the old world, which will open new markets for that great and valuable staple. I rejoice in this, as it will benefit that noble and honorable class of citizens of our beloved country, the farmers, and by no possibility injure any other branch of industry.

"The south have their great and valuable staple for the manufacturer, *Cotton:* but for capability of production is restricted to latitude and longitude; not so with corn—it may be raised throughout the length and breadth of our land with great facility and comparative trifling expense."

At his request the following analysis of Indian Corn has been made by Dr. R. D. Thompson, of Glasgow, one of the most distinguished chemists of the present day:

	Nitrogen per cent.	Albumen.	Equivalent.
Bean meal,	4.61	28.81	100
Brown Bread, (Prussian,)	2.68	16.49	174
Maize,	1.98	12.37	232
Lothian Flour,	1.96	12.30	234
Barley,	1.96	12.25	235
Indian Rice,	1.43	8.94	310

He says it appears that 100 lbs. of Beans are equal in nutritive power to 174 of Prussian Brown Bread, and to 232 of Maize. It is interesting, however, to observe the elevated position occupied by Indian Corn in the table—even above that of Scotch Flour.

Dr. Gardner—An analysis made by Dana, of Lowell, Massachusetts, is, I see, identical with this of Professor R. D. Thompson. Few kinds of wheat contain more albumen (the flesh-making element,) than corn does, which also contains the fattening elements. Corn is as valuable for flesh-making as wheat or oats, and beans contain what is called caseine—the cheese principle.

Mr. Carter—In Virginia I saw their mode of managing corn. When the grain is in the milk, they cut the stalk off near the ground. They leave four hills of corn standing and round these they set up the cut corn-stalks, with all the ears on. The cut ends resting on the ground. And they say that the grain then ripens better than if left on the original root. They had before this method, tried to dry their

corn-stalks for fodder in their Tobacco Houses, which is done by heating stones and placing them in the houses. But this mode did not succeed with the corn-stalks as well as the stacking above mentioned.

Mr. Hyde—Experience has proved this plan of cutting the stalk while the grain is in the milk, is a good one. I have tried it in Missouri, to save my corn from the frost, and I found the grain and fodder both better for it. The fodder was worth double that done in the old way.

Dr. Gardner—In the Farmers' Dictionary, I refer to Boussingault's analysis of Indian corn, he states that as food for man, it is 108 to 100 of the best wheat, and as 108 to 107 of common wheat.

April 27, 1846.

Prof. JAMES J. MAPES in the Chair.

Judge Van Wyck—I hoped that some gentleman would speak on the other subject of the day—the Keeping of Cattle, especially Cows. It is a subject of much volume. I will add now a few remarks upon it, which escaped me at the last Club. The subject of the Cow is very interesting; an animal of immense value; of such kind habits that a child can drive it, or can milk it. What a source of nourishment for the human race! The care of this animal—in the preparation of the lands to sustain it—the all-essential thing being perfect order in system—for habit in man, in animals—even in vegetables, form those essentials which cannot be overlooked. For even the grasses for the feed have peculiar habits on particular lands, and the farmer must exercise his best judgment in all that relates to this matter. No creature is more dependent than the cow upon the peculiar state of the farm she lives on, the kind and character of its cultivation; its grasses; its roots, and its adaption in all respects to her habits and taste. She is either small or large; a little or a great milker, according to all these circumstances. Double quantities of rich milk, or poor according to pasture and treatment. Care must be taken of her not only in the winter, but in the summer also.

Dr. Field—This subject has been much discussed: it is important. I have paid much attention to it. I have found, during summer, that it was hard to change the food often. From feeding on clover,

or oats cut green, and putting them suddenly upon green corn-stalks, I found them becoming thin. I would soil them in this method. Select a piece of land neither wet nor dry; make it very rich; it cannot be made too much so. In September, sow rye; double seed it; it comes early in spring; then oats and the common field peas; they will be a heavy growth; then clover; and after the rye is off, plant corn broad-cast; cut the stalks while they are green and tender, before it has its tassel; cut it when it is about two feet high. You can have two, or even three crops of such corn in a season. Plant corn and cut in succession. Thus, you can plant the rye in September, oats early in spring, then your corn crops. If this green feed should cause the diarrhœa, give the cows dry feed for a while. You can keep up your green crops in this way during the whole season from snow to snow! Four of my cows stabled in winter, and soiled in summer, after this plan, have yielded about three hundred dollars worth of milk, sold to certain hotels in summer, for two and a half cents a quart, and for four cents in winter. I had supposed that a great part of the feed went to produce animal heat. Two cows, which gave each only five quarts daily, gave eleven quarts each after being stabled and well fed there. My cows so managed all increased their milk, while those of my neighbors generally were dry; so great is the benefit of a warm stable, that by putting them into a warm cellar, they increased their milk eight quarts in about one week, and I attribute that increase to warmth alone. There is another thing of very great importance. Instead of a vast quantity of acres, take no more than you can put one hundred loads of good manure upon per acre! And every farmer has the means within his command. He can have muck; he can take the rich soil from headlands and put it in his barn-yard to mix with dung and urine, and all other things. Then the headland soil will absorb the rich fluid manure. Let those who want to know the effects of good manure well managed, go and see the farm of Gen. Johnson, the President of this Club. There they will see the rich results of his knowledge and care. I have 60 loads of manure by the means of a few pigs, and proper care of the litter, &c.

Mr. Carter—I observed in our Orange County, famed for butter and fine meats, that it was not climate nor soil, but it was care and attention that does it. Abundant cattle make rich pastures, and rich pastures fine cattle; and the well fed fat cattle go well through a hard winter; and not too many cattle upon a farm. One is well paid for proper care of cattle.

Judge Van Wyck—I suggest whether the expense of soiling, all things considered, does not overbalance the profit. It might do perhaps on a small farm, but on 200 or 250 acres, as the price of labor is now and has always been, I think that the profit would be counterbalanced by the expense. It is true that more manure is collected on land, but that which is dropped on the pasture is not lost, it sinks into the soil and becomes mixed with the grass, and especially the surplus or decayed parts that fall away.

Dr. Field—One of the greatest detriments to farmers, is prejudice, prejudice I may say, stereotyped all over the land. Soiling, however valuable, is not yet appreciated. I advise others to imitate the venerable General Johnson—the farmer for profit—of 150 acres of land—he only cultivated about one-third—but that is a perfect culture. He lets out the rest of his farm.

Mr. Wakeman—Gouverneur Morris, on his large farm has used the corn-stalks—planted broad cast, and if I recollect right, he remarked, that the saving by it was one half. Soiling is best near cities where lands are high priced.

Mr. Blyde—All depends on the value of the land. There is no question at all, that near this city, soiling is best, it will enrich the land, while in grazing, the manure is chiefly lost, and it is not difficult to show what the loss is compared with soiling. As to the headlands they can be used to great advantage, and so can peat muck, in the barn yard. I have tried the latter, and it is a fine absorbent of the liquid manure. With the change from one kind of feed to another, the cattle feel the change.

Dr. Field—Green feed produces sometimes diarrhœa, and dry feed stops it. But cattle can become habituated to green feed. A milkman buys cows, feeds and milks them, until they run down to five or seven quarts a day—then suspends milking them, and fattens them for beef.

I present a list of feed for cows, viz:

1 part grain.
2 " meal.
2 " water—twice daily.
2 " Indian meal.
1 " ship stuff.
1 " oil meal.
2 small arm fulls of hay.
Swill, one barrel.
Hay once a day,

when a cow gives six or seven quarts of milk a day, and is fat. Then they change sometimes—milk two years or three.

Mr. Wakeman—I have found it best to feed hay, Indian meal and ship stuff. One cow gave me milk for two, and another for three years. I feed twice as much ship stuff as meal. Much depends on the kind of cow. The English rule is, not to take a cow from rich land and pasture where she was raised, to poor land and pasture.

As to Indian corn, the qualities of it vary much in the different sections of the United States. The bread made from southern corn is dry and very palatable; that from northern corn is more moist and heavy. The quality of bread made from any corn depends as much on the modes of cooking it as upon the kind of corn used. I think that the success of the experiment of introducing the use of Indian corn into England, will depend upon these circumstances of quality and cooking.

Col. Edward Clark—Our northern corn seems to contain more silicious matter in its composition, than our southern corn. It requires much longer immersion in water before it is sufficiently softened. Our flint corn has its name from its hardness. Our southern corn is easily pounded or ground, and is much more easily cooked. When cooked with milk, or with a portion of lard in it, it is excellent food.

Judge Van Wyck—Indian corn helps the soil on which it grows for succeeding crops of grain. It is an excellent crop to precede one of wheat. The soil for corn must be rich—for it is a common saying *corn is a gross feeder!* and the cultivation necessary in a crop of it has the effect of leaving the soil in fine condition for wheat or any other grain. Corn is one of the strongest and best foods for man, and still more so for many animals. It has more of the *flesh making properties* in it than any kind of wheat. *Oats and corn ground together* form a feed which fattens animals more rapidly than any feed given to them. I believe that the southern corn, for some purposes, is preferable to the northern. It makes a lighter bread, and is more easy to cook. But the Northern is a stronger food than the southern. The stalks of corn fed to cows give the best milk, and more of it than any hay. This effect is probably due to the large amount of saccharine contained in the stalks; sugar is made from their juices. The roots of corn extend far and great care ought to be taken not to injure them in plowing or other cultivation.

Mr. Houghton, of Rahway, New Jersey—Our northern corn, if judged by its price in market, is to be preferred to any other, for it brings always *two cents per bushel more than any other corn.*

Col. Clark—Our northern corn weighs six pounds per bushel more than the southern corn.

Mr. Wakeman—Our northern hard corn is oily, and what is termed pop corn, owes its peculiar property to its oily nature. I read the following remarks from an intelligent writer, "Of the grain stuffs, rice and corn differ in this, that the former contains the least fatty matter, and corn the most, and ranging between these extremes, we have wheat, oats, rye, barley, &c., all different, and yet are capable of being applied to the conditions best suited to them. It is on account of the fatty nature of Indian corn, that it is such a strong kind of food, and that persons unaccustomed to it cannot at first endure it. The nations which feed chiefly on rice, are not near so robust as those which use Indian corn, as the blacks at the south mostly do. Persons unaccustomed to this kind of food, therefore, will do best to commence with the white Indian meal, in preference to the yellow, as it is not so rich. This preference has already occurred in England, where the article is new. There is only one more observation which I wish to make. As Indian corn meal contains so much fat in it, if kept too long it is liable to become rancid, and it is then more or less unfit for use. In the shipments made to the West Indies, the meal is commonly kiln-dried, to obviate as much as possible, this tendency to rancidity. For reasons just detailed, the white corn meal will keep rather better; and from its being lighter and milder, it is as much preferred for use in warm climates, as the yellow for similar inducements is in cold.

Mr. Hyde—The discussion of this question here, ought to be carefully conducted, for it may have some influence on public opinion abroad. There are two kinds of southern gourd seed corn, one white and the other yellow. Our western corn is a flat grain, and is both white and yellow. Our northern white and yellow corn have more gluten and less starch than the southern corn; so has the corn of the western country. The differences of quality are almost as distinguished as the latitudes in which they are produced. I have raised the Canada corn in Missouri, and its growth was there so rapid, that it was fit for eating by the first day of July. The white corn of Rhode Island, has more starch than most northern corn. Jersey corn has more yet, and makes better bread. Our western corn has yet

more starch. Our Tuscarora corn has most starch of any corn. And I have known persons find it quite difficult on examining fine bolted meal from the Tuscarora corn, to distinguish it from wheat flour. Our sweet corn has little if any starch; it is only good to eat when green, it is then very sweet and delicious. The Canada corn is insipid; Rhode Island corn is somewhat so. The sweet corn grows all over our country, without alteration in its peculiar properties.

Mr. Meigs—I have planted almost all the varieties of Indian corn. When Lewis and Clark returned from their visit to Oregon, they brought with them a small corn, which had been from time immemorial, cultivated by the Mandan nation of Indians, and I have for years cultivated that corn in my garden, and have distributed its seed for years. The plant attained about three feet of height and the ears of green corn, were usually fit to eat on the fourth of July.

Mr. Hyde—We can raise Indian corn in our country for *twenty cents a bushel.* We can have from thirty to fifty bushels per acre with a very moderate amount of labor when compared with other grain. Our wheat may average some twenty or twenty-two bushels per acre, so that we can easily have twice as much corn as of wheat on an acre. In our western world, corn is raised by the plow alone; the hoe is almost entirely unused by our people, and it is not necessary to use it. Corn pounded in a mortar coarsely, or ground coarsely in an iron mill, and judiciously cooked, is universally esteemed. I should like to hear something from my learned friend, Mr. D. J. Browne, on the subject of corn

Mr. Browne—My friend calls me up, and I will here exhibit a diagram of original experiments made by Dr. Jackson, of Boston, shewing cut sections of corn and other grains, on which in order to show the starch and phosphates contained in them, in their respective proportions, Dr. Jackson had poured a solution of phosphate of copper, and on others a tincture of iodine. The first shows by its green tint, the presence and quantity of the phosphates, by the latter the blue tint denotes the presence and proportions of, and by the dark red tint, the portions of dextrine starch contained in the grains. Mr. B. here performed the experiments in presence of the club.

I exhibit here the pop corn and the rice corn; the grains of the latter of the size, and nearly the figure of grains of rice. This rice corn, has of all the least portion of starch. In these grains the oil is the cause of the peculiar effect of heat in turning the grain inside

out, called "popping it," from the slight explosion which results from the decomposition of the oil of the grain. In order to produce this result in the best manner, have a box of wire gauze of small meshes, holding about two quarts; put in the pop corn and expose it to heat, often turning it about, and very soon every grain will explode and be turned inside out. The gases cannot burn, nor can the corn be hurt by the fire, for it acts on the same principle with Sir Humphrey Davy's Safety lamp. A light house on Lake Erie, has used oil made from corn for burning. Some sixteen gallons of the oil have been obtained from one hundred bushels of corn, and it is believed the oil is of a superior quality.

Prof. Mapes—Mr. Ellsworth, late of the patent office, exhibited this corn oil; it appeared to be very good.

Mr. Browne—The various applications of Indian corn are very valuable in rural economy. Those kinds which yield the most starch are best for bread. Those which contain the largest portion of oil are best calculated for feeding poultry.

I here present Indian corn from Peru, to this club. (It was distributed among the members.)

Prof. Mapes—Corn is supposed sometimes not to flourish for want of the presence of phosphates in the soil. Now to supply such deficiency, bone dust is well adapted, for bone dust contains eighty-five per cent of phosphate of lime, and fifteen per cent of gelatine. The fish called Moss Bunker, used for manure, is valuable principally on account of the super phosphate of lime in its bones. It is this chemical element to which its fertilizing power is due.

Mr. Wakeman—I request some one to inform me what is the difficulty in relation to corn meal when ground to fine flour? Why is the flavor changed?

Mr. Mapes—When ground very fine, it suffers a change on exposure to the air. It is oxygenated. It is on the same principle that the juice of an apple, after a little exposure to air is oxygenated, and changes its character and taste. If the flour could be bolted in vacuo, it would not be changed. And the juice of the apple when first expressed, resembles Champagne, but on a little exposure to air becomes cider. Take fresh apple juice and churn it so that the air becomes intimately mixed with it, and it becomes cider; so it is with

powdered sugar, it loses much by the operation; when dissolved in water, it renders the water turbid; not so in the loaf. Dissolve loaf sugar and churn it, and it becomes like molasses. Fine Indian corn meal, therefore, although salæratus be used, will not make light bread, and the taste of the salæratus will prevail in it. By much stirring the starch of vegetables becomes sugar.

Mr. DePeyster—Presented a quantity of Egyptian corn from his farm. This grain is larger than that which I first planted. It yields sixty bushels per acre. It can be eaten without grinding or cooking if necessary. It is the corn which our Saviour gathered, and for which Joseph went to Egypt.

GRAIN.

Judge Van Wyck.—This club commenced the discussion of the subject of Indian corn by the method of cooking it, intending to teach our friends in England. Now let us look into the modes of raising the grain. It is now becoming essential to increase the corn crops of our country, which are already worth twice as much again as our wheat crops. We exported latterly about one million of dollars worth of Indian corn, and about six millions of wheat. This shows the great consumption of corn by our men and animals; for in 1845 our Indian corn crop was 418 millions of bushels, worth 35 cents a bushel, and our wheat crop 106 millions of bushels, worth 65 cents a bushel. If we obtain a market for our corn in Europe, we shall have to plant more corn. France gives a crop of 198 millions of bushel of wheat—raising about 13½ bushels on an acre. Our corn crop is on the general average of our country, about 25 bushels on an acre. But in Madison county of this State, 170 bushels of shelled corn has been produced on an acre, the greatest on record—this planted in drills, as most of the extraordinary crops were.

Chairman.—This will shew our Southern friends how short of product, their cultivation is, compared with our Northern. Col. Skinner gave in his Farmers' Magazine many years ago, amounts of corn crops of 160 bushels of shelled corn to an acre.

Judge Van Wyck.—A beast consumes far more corn than a man. Our farmers need not fear the want of a market for corn; it is a much more valuable crop than wheat. Wheat takes ten months to grow! corn but four or five months! and leaves the soil in better condition for culture. It cleans the land, wheat is good for that, but

corn is still better. Americans better understand the culture of corn than any other people. The corn grown in Europe is but in small quantities; England will have to take her supplies from us chiefly. The best mode of culture ought to be better known among us. The best soil is rich sandy loam, in which the roots of corn can readily extend themselves, for they seek to penetrate not only deep but far horizontally. The soil should be very mellow, that the corn may acquire large stalks and of course large ears, for the size of the stalks and the ears will be proportioned to each other; as to manures, sod is excellent for corn. Put upon the sod barn yard unfermented manure, then plow the field, turning the manure and sod completely. The sod and manure together will make a rich soil for the growth of corn.

Put some manure also in the hills. Take one bushel of lime and plaster, mix with five bushels of ashes, of this put a table spoonful, in each hill of corn. By this method one farmer got 108 bushels of shelled corn per acre and this planted in the hill, and 110, 115, and 130 have been got. The last was by putting twenty-five loads, after plowing (wagon) on an acre. This was done in our Broome county; we are yet unacquainted with the proper use of guano; it gives excellent corn crops in South America; we ought to try experiments with it. There is, however, a probability that the supply of guano will before long be exhausted, the price will become too high. Corn stalks make an excellent manure for corn; there seems to me to be (if I may so express myself) something homogeneous in manures. It is so of grass, which forms one of the most perfect manures for grass crops; and there is analogy also in the growth of animals, which do best on parent milk. I have seen the experiment tried of feeding animals on other milk than the purest. They do not thrive so well as upon parent milk.

Col. Skinner—Read extracts from letters from Maryland and Delaware, on the corn question. The intelligent writers speak of the necessity of preparing corn for exportation by kiln drying as indispensable. Without that process corn is very liable to become heated and musty, so as to be unfit for food for either man or beast. The kiln dried corn meal from the Brandywine mills, &c. made from the yellow corn, has almost monopolized the West India trade. The yellow is preferable to the white corn for this purpose. This process is indispensable if we export corn to Europe. James Candy says that from fifty years experience he has learned the necessity of this process with corn intended for exportation.

Corn ought not to be shelled until it is wanted for grinding. The prejudice against corn in England has in a great measure arisen from the frequent examples of heated musty corn received there, not being fit for animals to eat. We should kiln dry it, brand it appropriately, and then send it abroad. Many countries can furnish wheat much cheaper than we do, but cannot furnish corn so. I see a notice in a newspaper, that wheat from Ibraila in Wallachia, with all the expense of shipment (about one hundred per cent) still sold for fifty cents a bushel!

Chairman.—Spain has an admirable soil and climate for Indian corn. I have seen it grow there finer than any where else. The climate is a blessed one, the most so of any in the world. France is troubled with severe hail storms; Spain not at all. I often found the corn from our country when it reached its destination, ruined by heating on the voyage. It had become musty and of little or no value. Kiln drying is absolutely necessary to preserve it for exportation. We must learn and practice the best mode of kiln drying it.

INSECTS INJURIOUS TO VEGETATION.

July 14, 1846.

Jonathan L. Hyde in the Chair.

Dr. Underhill.—Before I enter on this discussion I wish to correct an error in some printed reports of my remarks at the last meeting. I spoke of the good effects of peeling off carefully, (not injuring the sap beneath,) the rough or diseased bark, or instead, shaving off the bark with a drawing knife till nearly through the old bark, when new will be formed, that this process was favorable to the growth and fruiting of barren trees. I did not speak of it as a means of destroying insects particularly.

This subject of insects is a wide field, and it is one of immense importance. I present here for your examination, branches of quince and pear trees, showing the destruction caused by the sting of some insect a few feet below the outward ends of the branches. You perceive that the wood is turned black and hard like ebony or black walnut. I also present some quinces, nearly covered with an orange colored moss or excresence, the interior of the quince, as you see, full of worms. I caused my quince trees to be whitewashed, body and

limbs, and now I have not one-tenth of this mischief that I had before, and a neighbor who did not whitewash his quinces suffers now as I have heretofore.

Lime is used to destroy snails, which are very troublesome in England and sometimes here in very damp weather, in low grounds. A few years since they came on my quince trees, I sifted lime over them and the snails were all dissolved by the lime, or nearly so. This has been a wet season, but I have no more snails. The blight in fruit trees has been ascribed to other causes than insects. But I am decidedly of opinion that blight in pear trees is due to insects. This blight has been talked of these twenty years, and until very recently, without any suspicion that it was caused by insects. The plum tree is affected, especially the Damascene plum. I observe some limbs are killed, similar to the pear and quince We have long suffered from a class of insects that sting the apple, pear and cherry, and destroying much of the fruit at an early period of their growth. We have an insect among us which has been named the *East Wind*, for ten years past, supposed to have curled up the peach leaf and caused it to drop; but a new leaf succeeds. I have this year examined the diseased peach leaf, with a glass, and found that these leaves all had in them great numbers of insects. The nits may have been deposited here by beetles which were exceedingly numerous at the time the disease appeared. At evening the air about the orchard was darkened by the immense number of these beetles on the wing. The oak leaf is also attacked by them. All this is not the East Wind. Formerly some few leaves used to be attacked, now scarce a leaf escapes. This is working an evil in our fruit trees, for although they have new leaves, yet are they enfeebled by it, and the fruit loses its good character. The damage to the peach is not all owing to the worm at its root. And our noble pippin is now assailed by a similar insect, its leaves are all stung. Proper investigation of this subject may lead us to very valuable results. Vineyards suffer least from insects. When catterpillars attack small vines in your yards and eat off the clusters, the best way is to have a sponge on the end of a pole, dipped in spirits of turpentine, the least touch of which makes the catterpillar fall. My vineyard has not suffered from them.

The injury to the leaves of the pear trees from the sting of insects appears to be commencing. I have heretofore stated my success in destroying rose bugs in my vineyard, by plowing late in the fall, in cold weather, thus turning out the larvæ to be killed by cold.

Evening is the time for insect jubilees. Nineteen-twentieths of the beetle tribe, and many other insects commit their depredations then. In ancient times fires were made on the highlands north of Egypt to destroy the armies of locusts. This being supposed a foolish practice, was discontinued, and Egypt again suffered the loss of her crops. Fires made in evening have a happy effect; insects rush into it drawn by the light. I know a man whose pippin orchard was almost destroyed for two years by canker worms; he made evening fires in the orchard, which destroyed the millers which produced the worm, and then had good fruit. I suggest the making fires, with proper care, in orchards as soon as insects appear, in evenings. And I add plow the ground well, late in fall in cold weather; it will turn out millions of larvæ to perish by cold. Some say turn in hogs! that has done well; they eat up the fallen fruit and insects in them.

There is a prodigious increase this year of the insects that sting the leaves of the apple, very similar to the peach.

Apple trees should be well scraped in winter; millions of eggs and larvæ under the rough bark will be killed by it. Leave caterpillars undisturbed and each produces a miller or butterfly to lay more eggs. The nests of these caterpillars are easily destroyed, and by so doing you confer a blessing on all your neighbors as well as on yourself.

When I see (as I have) a man setting down, looking in despair at the worm nests in his trees, I feel as if I should be glad to give him a galvanic shock! to arouse him to his duty to his neighbor and himself. He might just as properly sit still and see his neighbors' cattle, or his own, breaking into his corn field, without making an effort to turn them out. Last year I destroyed some twenty thousand of these worms' nest in my orchards. In my neighborhood are wild cherry trees, which are full of these nests, so that when I get a new supply on my place I owe it to this neighbor as well as to negligent farmers.

All our agricultural societies and clubs ought to take up this insect question. There is a curious excrescence on our wild sweet briar, made by some insect longed within. The English white hawthorn is attacked; here is a branch with the young haws upon it, ruined, you see, probably by the same insect which stings the quince tree. I believe I have discovered the larvæ of this insect, but am not yet positive of it.

Mr. Meigs.—Some plants are not liable to the attacks of insects; the Ailanthus seems to be one, and a very singular fact is stated relative to the Lycopersicon—*the tomato*—that when legions of locusts devour all plants, poisonous and all—night shade, crows' foot, &c., there has always been one solitary exception, and that is the tomato. This fact was especially noticed in Estremadura in Spain. I venture to hint that such plants as are avoided by the insects might possibly be planted around pieces of ground, so as to afford protection to others. I say this, because in seeking for an unknown result, it is safe to try theories or conjectures.

Col. Skinner.—You are aware of the importance of the article turpentine, of the fact that the long leafed pine which produces it, is disappearing, leaving no young growth to supply its place. And this is also attributed to an insect working at its root. Great numbers of noble pines of three feet in diameter and 150 feet high, stand, some of them stretching their naked arms abroad, others prostrate on the ground, and no successors of their kind.

Man meets with vast power in insect life. What ravages are those of the little ant. In some countries it is probable that no written documents or records can long escape their ravages. They devour all. Whole forests have been killed by beetles! In some forests of South Carolina ninety trees out of one hundred have been killed by a small black winged bug!

The ornithologist, Wilson, justly complains of the destruction of birds, more particularly of the wood peckers, red headed and ivory billed, whose services in destroying insects are of such great importance. I refer to James Rennie's Essay on Insects; it is very interesting.

Dr. Underhill.—I must again urge the exceeding usefulness of birds in destroying noxious insects. A cat bird will destroy for herself and for her young, hundreds in a day.

Our crows must be preserved. On my place I have a rookery of many thousands; they are many of them in my orchards all winter. In summer they follow my plows all day long, feasting on grubs and worms and beetles. I save one hundred dollars for every one I lose by my crows. Young corn is easily protected from them. I stretch cotton twine around and across my fields and the crows never put foot in them; they suspect a trap. During very snowy winters,

when deprived of food, they trim my cedar trees beautifully. They nip off with perfect regularity, three or four inches of the tender extremities of the branches in their efforts to get the cedar berry, leaving the form of the tree very handsome, and the trees all grow the better for their pruning. If I had the power, not a solitary crow should ever be killed.

Samuel Allen.—Sometime since in Ohio I stopped to inquire into the cause of the destruction of a neighboring forest. I was told that an army of worms or insects which traveled on the ground, from tree to tree, had done it. That a kettle was placed in such a manner as to catch some of them in their journey, and that a basket full of them was caught in it.

Dr. Field.—My orchards are affected in the same way as Dr. Underhill's. No allusion has been made to the mode of destroying insects on trees by syringes. Great service can be done that way, even by pure water; but I advise the use of a decoction of tobacco or of soot mixed with sufficient molasses to make it adhere to the leaves. Dr. Underhill's mode of scraping off rough bark is good. I have examined the rough bark and found immense numbers of larvæ of insects in it. If we had as proper an antipathy to them as we have to snakes, we should soon destroy them.

Judge Van Wyck.—The insects and their larvæ are many of them so minute and their form so changing that it is hardly possible to exterminate them. We can only lessen their numbers. I examined some apple trees in Jersey lately, and found the leaves curled up, and on opening them, out flew small flies of slender forms like wasps. I do not know whether this is a new enemy of the apple. After heavy dew or rain sprinkle lime, fresh slaked, in moderate quantity, not enough to burn grain, and the insects on it will be destroyed or driven away. It has been effectually tried on strips of grain; some limed, others next to them not. The limed parts all free of insects, the others nearly destroyed by them. This is one of the many valuable properties of lime, which seems to have been placed every where by the Deity for good purposes. It is the alkali of the lime which does this service. Where lime is not at hand, ashes will do nearly as well, owing to its alkali. Potash is also good. Scouring trees well is an excellent practice.

Dr. Field.—We need accurate information, and I move the adoption of the following resolution:

Resolved, That the members of this Club, and farmers and gardeners generally, be requested to collect, preserve and send to the American Institute, specimens of such insects as are destructive to vegetables, and such remarks in relation to them as they think proper. And also that the Institute be requested to offer a liberal premium for the best preparation of Entomology, for the benefit of the Club.

Mr. Abraham Wakeman.—Twine drawn around and across a corn field is almost a sure preventive of the attacks of crows and black birds, the latter partaking of the sagacity of the crow. But thus the insect tribes have a feast. Farmers have long tried to kill the insects in corn by dropping alkalies at the roots, and this also increases the crop of corn. On examination you will find some stalks of corn, when about three feet high, having in them, at a little distance from the root a wire worm, which destroys the inside of the stalk. The law of Connecticut, giving a black bounty of ten cents per head for killing crows, has caused men to visit the rookeries of these useful birds with their muskets, and kill hundreds of them. Man kills the birds, and the noxious insects then multiply their destructive forces. In the northern and some other countries you will find numerous large dead pines, which are said to be victims of insects at the root; no young pines growing in their places.

July 21st, 1816.

J. L. Hyde in the Chair.

Mr. Meigs.—It may be proper to notice insects useful to man, in this description, and also the efforts made elsewhere at other times, to correct the evil of injurous insects.

Humboldt says, that the cochineal produced in South America an income of five hundred thousand pounds sterling a year. We know the value of the bee.

Leuwenhock says, that one pair of Hessian flies can produce in three months, seven hundred thousand. Kirby says that some insects produce incredible numbers of offsprings. The white ant, (Termes fatales) lays in one year over two hundred millions of eggs.

In 1788, England was greatly alarmed by the presence of the Hessian fly. They supposed it had been imported from the United States,

in cargoes of wheat. The Privy Council sat, day by day, anxiously debating upon this calamity. Expresses were sent to the offices of the customs to examine wheat cargoes; despatches were written to the Ambassadors, to France, Austria, Prussia, and America, for information. The documents collected on this subject by the Privy Council, filled two hundred printed pages, octavo. And no precise information of any great utility was obtained.

The most important treatise of modern times, on insects, are those of Donovan, who has given not only those of Europe and America, but the Oriental insects, also; Latriellie's work, Rev. Mr. Kirby's and Leach's are valuable. The theories of Fabricius have become unfashionable, and Linnæus has been reinstated on this subject of Entomology.

Dr. Underhill.—The grasshoppers are sometimes very destructive of vegetation, especially in a dry time. This I have noticed on Long Island. Previous to their appearance, a large white grub is noticed in great numbers, which sometimes eats off the roots of grass in meadows so entirely that the surface of the meadow may be rolled up like a carpet. This occurs early in June. Soon afterwards, the grasshoppers appear and the white grubs disappear. The best remedy for this evil of grasshoppers, is the Long Island one—*turkies*. They collect as many turkies as they require, turn them out, and the land is soon cleared; the quantities consumed by the turkies is astonishing, and what are not eaten are frightened away. But the most effectual mode with which I am acquainted, is the plowing late in fall, turning out to the frost the insects in the soil. I did so with the rose-bugs, and I froze them almost all, and millions of larvæ of other insects with them. Among them the black grub, that enemy of our corn crops. And in the spring, I put on the land 50 or 60 bushels an acre of fresh slaked lime; shell lime is best. A good dressing of unleached ashes is very good to destroy the striped yellow bugs which injure the cucumber and watermelon vines. The number of useful insects, and some of them are eminently so, is but small. Bees and some others, convey the fructifying pollen to flowers which require it. The great body of insects are obnoxious.

The reason why our western country is not much injured by insects, is, the rapid, strong growth of plants in a virgin soil. Birds, too, are more abundant. Here, the martins, swallows and wrens are very useful in destroying insects; and when plants or trees are not of a vigorous, healthy growth, insects pounce on them as their prey. We ought to court the habitation of birds about our houses. The

plant louse is very prevalent this year. It is in countless millions, and seems to increase in number by propagation as great as the ant. After a little time they have wings, and you may hear the noise of their alighting upon the leaves, like sand thrown upon them.

I observed both the black and the green plant louse on the same plant, but they did not seem to associate. We ought to clean out these insects at their first appearance. I now believe that this plant louse is the insect which is doing so much mischief to our apple-trees and peach-trees. They attack the tender growth of the grape vine leaves also.

The best mode to destroy them is, to take pains early, pull off the leaves on which they are, and wash the trees; use a syringe with a solution of whale oil soap in water, or potash. When they have got their wings, you can do nothing with them.

Mr. Meigs.—How is the egg of this insect preserved over winter?

Mr. Cozzens.—The eggs are deposited in crevices of the bark of trees. This insect is an aphis, and passes through four mutations in the year; at each change it lays eggs, and it cohabits with its male in only one of its conditions.

Mr. Hamilton.—Their eggs are not always deposited in crevices of bark, for my young seedlings have them on. Some say it is honey. That the ant will carry the aphis up a tree, mix in among them and never disturb them. This year I remarked immense numbers of the aphis and ants in the apple nursery. I have used tobacco solution into which I dipped a long-handled brush and with it sprinkled my plants and trees. I have used up two barrels of the solution mixed with soapsuds, and with great benefit. The ants and the aphis have both disappeared together.

The black aphis prefers the cherry-tree, but it is found on the dock plant. What is called the *American Blight* appearing on apple-trees, is a white, woolly-looking louse, and is very destructive of young trees. Sulphuric acid mixed, three-quarters of an ounce with seven and a half ounces of water, makes a good sprinkle for them. The white grub is a destroyer of young seedling trees. In Europe, it is said that the American blight was imported there; we say here, that it was brought from Europe in young trees. The accusation is mutual.

M. M. Noah.—The following suggestions published by him were read to the club.

"We would suggest to the Farmers' Club at their next meeting, that they give information what ornamental and forest trees can be planted in cities that worms will not attack. There are such trees, and no others ought to be planted in cities and large towns. Some of the most beautiful trees in the Park and Battery are entirely stripped of their leaves by worms, and it is during certain periods of the summer, a complete nuisance to pass under them. Will Judge Meigs, Colonel Clark, Doctor Gardener, Professor Mapes, and other members, give the desired information?"

Mr. J. Cozzens.—The following communication from him, was read:

SUPPOSED CAUSE OF THE FREQUENT BURNING OF BARNS BY LIGHTNING.

New-York, August 1st, 1846.

Dear Sir:—Having noticed that more barns were struck by lightning at this season of the year than at any other time; that is, after they are filled with new hay, I would wish to call the attention of those who are the most interested, to make inquiries as to the particular cause, and also, to report to the club, if convenient. I have thrown together my ideas on this subject, in this paper, which I wish you (if you think it worth while,) to read before the club. It is well known that by these accidents, caused by lightning, the farmer often loses his whole crop of hay, and other crops, which may be stored contiguous to it; his barns, and sometimes his most valuable animals; for I believe it to be a fact, that more barns are burned by lightning just after they are filled with new hay, than after the hay has become seasoned, or when it has become purely dry, or when the barns are empty.

At this season of the year, and about the time the hay is housed, there are more thunder storms than at any other season, (if we except this year, 1846, so far as the first day of August.) Hay, when first stored, has always more or less moisture in it; it has also an essential oil; it is also always more or less hot from the field, and when put in the barn in large quantities, its juices and moisture are undergoing decomposition; and the compound is giving out gases which are forming new compounds; these ascend from the barn, and like all other exhalations, reach some height in the air, so that when

the clouds which pass over, are plus, and the earth about the barns is minus, the fluid, *oleous* gas, and vapor, may act as a conductor, and attract the electric fluid, and carry it directly to the heated hay in the barn.

I have thought a great deal on this subject, and am well persuaded that there are more of these buildings destroyed by lightning when filled with new hay, than at any other time. May not the above assigned reasons be the cause?

Hay, when first housed, becomes heated; then the moisture evaporates; this exhalation (process,) may carry off the electric fluid, and leave the barn and its surrounding locality with a less quantity of electric fluid than is required to keep up an equilibrium.

It is my belief that all exhalations from the earth carry up the fluid, and where they are greater in one place than in another, the clouds become charged with different quantities of the electric fluid, and sometimes discharge into each other; say cloud No. 1, is charged 400—cloud No. 2 is charged 800—they meet by different currents of wind, and discharge into each other. The quantities are equal—600 in each—in all, 1200, which is carried over a barn that is but 200; the clouds are discharged into the barn, and all becomes equal, 1400. Now, if there was not something to make the barn minus, it would not be struck. But suppose the barn to be plus, say 2800, the fluid would pass from the barn to the cloud, which may not be, or is not the cause, in my opinion.

Evaporation carries off the electric fluid, so that the most powerful electrical machines have been made by taking advantage of this process. Exhalations carry off the fluid in the same way; hence the accumulation of it in clouds, and the distributing of it in thunderstorms, which take place when a charged cloud is driven by the wind over any locality which has a less quantity of the fluid than itself. Now, how to prevent the electric fluid from doing this mischief to barns, is the great object.

Suppose inquiries were made of those who were the sufferers, or their neighbors, if they had lightning-rods to their barns, or in the locality?—how far off?—if in good repair?—how many?—at what distance (in feet?)—(for if it is said that the lightning-rod will not work, act or operate, for more than 40 feet, or thereabouts, around its station,) as to their height?—if any barn or house was struck which had a steeple standing near it; if so, was there a rod to the

steeple?—was the steeple 100 feet high, or of what height?—and every thing else that might give information on this subject—were there any tall trees near it?—was the barn struck at that part which contained the hay, the straw containing the grain, or the threshed straw?—had the hay been stacked?—and what quantity of salt used to a supposed ton?—was the hay housed damper than it should have been?—was the hay well cured?—and what kind of hay?—clover, timothy, or any other products of the farm?

I am pretty certain that if hay was salted when housed, it would be beneficial in stopping the partial decomposition; and of course, there would not be so large a quantity of moisture carried off in such a hurry, as there would be without; and of course not so great a quantity of the essential oil of the plants, nor of the electric fluid; the process of drying in the barn would go on slower, and would not exhaust the electric fluid so as to make the locality negative; for it is known that two bodies having equal quantities of the fluid, whether the quantities are great or small, have no operation or action on each other.

To Henry Meigs, Esq., *Recording Secretary of the Amer. Inst.*

D'Jay Brown asked for the reading of the report on Gurneyism, in the report of the Commissioner of Patents, which was read.

Roswell L. Colt.—I am glad you have taken up the subject of insects, and the many depredators upon our fruit and forest trees; for peaches, I think I have discovered, (or rather, I should say, have successfully practiced on the discoveries of others,) by applying as a preventive, first, and curative next—gas coal tar to the roots of peach trees, and for three inches above ground. When I set out young trees, before planting, I apply the warm coal tar with a brush, of course, and see that there are no worms there at work; for old trees, we examine them in May, pick out the worms, apply the tar, and healthier trees you cannot find in this State; all that is said against coal tar to the contrary notwithstanding. It is true, I wash my peach trees, and all my fruit trees in March, with soapsuds made of 1 pint whale oil soap, to 15 of water; this kills all caterpillars, lice, and leaf depredators, and I feel a pride in saying, that not a caterpillar nest can be found on my premises.

We had, a fortnight since, a new kind of caterpillar, of the common size, and instead of being gray, or slate color, it was a hairy caterpillar, perfectly black, and depredated upon nothing but the

English elm. Whale oil soapsuds, applied through a green-house syringe, kills them all; as it does the lady-bug, so destructive to roses, cherries and grapes. I told my gardener to bring to you some of the black elm caterpillars, but they died, and he did not think them then worth carrying.

A communication on a preventive of worm in peach-trees was read. It says:

I have, within the last six or seven years used the corrosive sublimate in two or three different ways, applied to my peach-tree roots in the latter part of October, and have never found a grub on any one of my trees in the spring, or any part of the year thereafter. The remedy must be well applied, and early enough to prevent the little worms making their entrance at all, for, if they wound the bark, however slightly, the tree will be injured, but they will be killed by my remedy without delay, even when they are entirely imbedded in the bark.

The earth must be first removed from the trees, down to the departure of the roots, and the surface well rubbed with a cloth or brush, and all crevices and defects in the bark freed from the soil. The preparation which follows, must then be applied, a little warmed or softened, but not so much as to permit the powder to separate from the mass. Then take an old, stiff paint brush, and thoroughly cover every part and crevice of the bark with the preparation, from the branching of the roots to about two inches above the ground. Then surround this surface with a single bandage, made of old India rubber cloth, oil cloth, or any cheap muslin well painted and dried for use, or any other covering which will certainly prevent the absorption of the corrosive sublimate by the wet earth. Then tie a string round the bandage firmly at the upper end, above the ground, and replace the earth, and pack it around the tree as before. In the early part of the next April, take off the bandages, cleanse and save them for use again.

You will find the preparation still on the bark, but no grubs alive; and if any are found in newly dressed trees, there will be nothing more than the skins of worms which had gained an entrance before the dressing was applied. No grub can live under this dressing, if applied as is here directed. I have made my preparation without any weight or measure, but think the following is about right, but it may in large orchards be used, no doubt, with a less proportion of the corrosive, but for this I will not vouch. I have usually added

nitre, but do not consider it very important, as the corrosive is, no doubt, the active poison.

Take common tar, 2 lbs.; tallow, also 2 lbs.; melt them together, and after they are cooled so much as to hold suspended, add the following:

Pulverized corrosive sublimate, 3 oz.
do common salt of nitre, 3 oz.

Have the preparation well stirred from the time it begins to cool until the powder is thoroughly diffused through the entire mass, and well cooled.

The corrosive costs only about eight cents per pound, and would be sufficient to protect a large orchard. The whole expense of making the application, will, I think, not exceed two cents a tree. I hope, through the influence of the American Institute, the plan may be fully tested in other hands, and be of public utility. You are at liberty to use any part of the above hasty details, if you think with me, that the plan will bear the test of scrutiny, but as I have a strong aversion to having my name before the public, you will please withhold the same in any publication you may make.

TURNEPS.

Dr. Underhill.—Perhaps a repetition of our doctrine on this subject may be proper; all have not heard it. It is an important crop in England, but its value is not yet felt here. England enjoys a climate peculiarly adapted to its culture. The moistness of that climate, is perhaps the main reason of its great success there, and the great returns of the crop. We here so often suffer from drought at the season of planting, that three out of four, or four out of five of our seasons are unfavorable for turneps, except in certain grounds. We often sow it among corn. It is protected by the corn, and when that is cut off low, the turneps mature, thus giving a corn and a turnep crop together. Great disappointments occur here in our turnep crops from drought. In England it has an immense value as feed for sheep and cattle. The ruta baga and yellow Aberdeen turneps are best to fatten cattle, and sheep fed on them lose that muttony taste so unpleasant, and gain a delicious flavor. The influence on mutton is similar to the cresses eaten by canvass-backed ducks, rendering their flesh so fine. Grouse and partridge are bitter and un-

pleasant to the taste when budding, until they have fed on their favorite food.

The turnep yields a heavier crop than any other vegetable in England. It almost always precedes the wheat crop. The mild winters of England enable sheep to feed on them in the ground—they eat them out of the ground. They are placed within an immovable iron fence upon a patch, and when that is eaten, moved to another. Dropping their dung on the patch, they enrich the soil. The following year an extraordinary crop of wheat grows on these fields.

Mr. Meigs.—You recollect that in a late return to the British Parliament of the value of English agriculture for the year, it is estimated in all its value, at the great sum of *three thousand millions of dollars!*—of which nearly one half was ascribed directly and indirectly to the turnep crops.

Dr. Underhill.—The cattle, and sheep particularly, require food that is not too concentrated. The same kind of turnep is not so likely to succeed here. We must have those that run their roots deep into the soil, such as the ruta baga, the yellow Aberdeen, or Dale's Hybrid. We must plant these early; they will keep all winter; they are more solid and more nourishing. I recommend the sowing of the yellow Aberdeen and Dale's Hybrid, *now*. The red top turnep grows large and must be first fed to stock, for it will not keep well.

Although it is perhaps not in order, I beg leave again to speak of the cultivation of the carrot. Enough has not been said of this highly valuable root. This root bears drought well; it runs down deep; it should be planted early; no insect touches it; it is far more nutritious than the turnep, and I do not know any vegetable except *cazava*, that fattens stock so fast and well as the carrot. Cows fed on it, yield a rich, yellow milk; the cheese from it needs no other coloring; the butter is rich in flavor and color. I am so convinced of its value, that I mean to have, next year, a thousand where I now have one carrot on my farm. We can feed our cattle with it all winter, only giving them hay enough to form their cuds, without which they cannot live. Begin to feed about two quarts of carrots at a meal, and gradually increase the allowance, but do not exceed a half bushel.

The average crop of the carrot is greater than that of turnep; 600 bushels is a good crop, but by great cultivation, one thousand, and even *twelve hundred bushels have been raised on one acre.* The seed must be sowed in April, not later than the 1st of May. Carrots must be dried carefully, and so put in cool, dry places, free of frost and damp. It has been recommended to sow carrots with flax; pulling the flax loosens the soil, and then the carrots mature. The flax and carrot seed are harrowed in together.

I repeat, plant turneps on the moist alluvial grounds, on banks of creeks, in valleys. When turneps, as with other vegetables, grow luxuriantly, they are not hurt by insects. The turnep flea, or rather fly, destroys thousands of acres sometimes, in a short period of drought. This fly attacks only the leaf, some others and worms attack the bottom. Some persons have followed the plan of feeding these insects by means of bran or ship-stuff which have small portions of their flour attacked. They sow this over a turnep field and the fly feeds on this flour instead of the turnep leaf. One person gathered the fine dry dust on the road, and sowed it while the dew was on the leaf; the fly would not then touch the dusted leaves. This dust remains on until the next shower, and if that does not come in four or five days, the fly no longer assails the crop. Another person sows dry unleached ashes thinly over the field; perhaps guano or poudrette would be better still, giving offensive taste and smell to the plants.

When turneps do not thrive, worms are apt to assail them, but not when the soil is rich and growth luxuriant. Turneps are a very valuable crop when the hay crop is bad. In Westchester last year we supplied by turneps half the crop of hay which was lacking; and this city requires much hay, which our farmers can spare and make it up in turneps at home. And the culture of the root crops in a rotation seems to favor those chemical principles indispensable to soil.

The parsnep is a very valuable root. Some have objected to feeding turneps to cows, because it gives a turnep taste to the milk; but if you feed them to the cow either just before or after milking, there will be no such taste to the milk. I should be disposed to try guano or poudrette on the turnep crop, if the weather was moist, but in drought they would be of no earthly use. I lost a crop, however, last year, by giving it an *over dose of guano.* Perhaps we can hardly use it as they do in moist England. The best way to plant them is in drills, plough two or three times, harrow as often and you may

sow them broad cast, but they must be thoroughly weeded for a fine crop.

Mr. Hyde—If the turnep were a sure crop here it would be very good, but it is very common for it to fail. Farmers have the impression that it depends on an adequate supply of rain, about the time of sowing. The hostile insect is a very small one, which on your approach suddenly disappears by (apparently) jumping. It has cut off whole crops in a very short time. I have tried the ashes over the leaves without success. I have sifted soot over them with better effect.

J. D. Williamson—A gentleman on Long Island, permitted me to examine corn planted by him on barren sand. It was so planted as to form his name. A wager had been accepted by him as to raising corn on such land, by any method whatever. He made holes in the sand at one, two and three inches distant from the seed in different hills; he filled these holes with guano and covered them with the sand. In hoeing he did not disturb these holes. He planted corn on the neighboring land at the time. The corn so treated with guano is nine feet three inches high, while the other crop is two or three feet high only. This gentleman is from Peru, and says this is their mode of using guano on their sandy soils. I did not see any difference in the growth of the hills which had the holes one or three inches distant from the plants. The guano was some of that imported by Mr. Collins, and he obtained it at the Atlantic Dock, Brooklyn.

Chairman—Our regular subject is in order,—the "making of Domestic Wines, and Roots for Cattle."

Dr. Underhill, of Croton Point—It may be useful to repeat, and it is too important not to be thoroughly understood, that the Carrot and Sugar Beet are particularly adapted to the dry climate of our country. This beet, perfectly cultivated, acquires an enormous size; is very nutritious, exceedingly fattening to cattle, and yields more vegetable matter than any other, not excepting the turnep; is preferable to Mangel Wurtzel, but its saccharine is not quite so much concentrated as that in the Carrot. I hope that our Agriculturists will try them both effectually. A crop of these is absolutely certain! drought or no drought! No insect injures either of them. I have had sugar beets on my farm which weighed twelve or thirteen pounds each. In France, cattle are fattened on them, (although they have been subjected to the process of extracting the sugar from them,) to an im-

mense extent. Some have failed here from not having had the right good seed. This beet is of a yellow color. On a rich damp soil, there has been raised from one acre, one thousand to twelve hundred bushels of them. It is proper to have both Carrots and this Beet, for the Beet not keeping so long as the carrot must be fed to cattle first, then use the Carrot which keeps until late in the next Spring. It is believed that the carrot may be left in the ground all winter without injury to it; that in this respect it is like the parsnep, keeps as well as that does. These roots are excellent for soiling purposes, and are very fattening for cattle and horses.

These roots must be well separated in cultivation. I plant carrots in rows, one foot apart, and the carrots in the rows four or five inches apart. I plant the sugar beets in rows eighteen inches apart, and the beets in the rows from eight to twelve inches apart. These must, of course, be well weeded and tilled.

Mr. Ransom—The Sugar Beet strikes its root very deep. Oxen, Cows and Sheep prefer Ruta Baga to it, which keeps long. It is chopped up and mixed with some Indian meal for their feed, and they fatten rapidly upon it. I did not discover the peculiar value of the Sugar Beet for cattle. I maintain that potatoes, cooked with some Indian meal, fatten stock excellently. Apples with twice their quantity of cooked potatoes are also very good for fattening cattle.

Dr. Underhill—Indian meal is good we all know. It would answer well even with some chips in it. Ruta Baga tends too much to tops; its yield per acre bears no comparison with the beet and carrot, and it is besides much damaged by insects; but it keeps longer than the sugar beet.

Mr. Lathrop—I have kept the sugar beets, in a dry cellar, until the month of August of the next year.

Hon. Mr. Terrill, of Georgia—On the subject of Domestic Wines, I will make a few remarks. I have, in Georgia, an acre and a half of Scuppernong Grape vines. A single vine has covered an acre, and if not disturbed, one and a half acres. Vines are trained on frames. Mr. Ponce, a neighbor, makes wine of these grapes, which resembles champagne. No brandy is used in it—it is a very pleasant wine. It is said that this grape is named from a Creek at Pamlico Sound, where a vessel being wrecked, seeds of this grape were washed on shore, and there began to grow. A method of making this wine, is pressing out the juice and adding to it apple brandy

—about ten per cent—add also a little loaf sugar. We shake the vines so that the ripe grapes fall into sheets spread to catch them. We make wine from a wild grape, which is something like the Muscadine, and of other wild grapes. The odour of the Scuppernong grape is highly agreeable and powerful, filling large rooms. One gentleman is making very good brandy from grapes, imported as well as native. Some suppose that our Warren grape was originally imported: it is named from Warren county, Georgia. I think it is a native grape.

Dr. Underhill—We have heard of Herbemont's Madeira.

Mr. Terrill—It was a good wine: he is deceased. One of our difficulties with the Scuppernong, is the pruning of it. We must be very careful. It must be pruned in November at the fall of its leaves; otherwise it is injured much, if not fatally. The culture of the Warren grape is extended all over our country. It ripens rather later than the Isabella. We do not like the latter much in Georgia.

Charles Henry Hall—Wine, if properly made, should be without the addition of brandy. When its processes, its fermentation, are made as they should be, it is only necessary that they should be preserved in proper situations, as in the caves made for that purpose in Europe, where the temperature is right for their preservation. Some of these caves are formed in the sides of hills and holes are made from the surface of the ground to the caves to give exit to the gases formed. I call upon our learned friend Dr. Underhill for information; he raises grapes on the large scale, a production of great importance.

Dr. Underhill—Nearly all, if not all fruits, contain the vinous principle. When the must of grapes or other fruit is warmed to about one hundred and five degrees of Fahrenheit, then the alcohol contained in them comes over, and such is the nature of this chemical process that afterwards adding the brandy or alcohol to the wine is unavailing; no chemical combination restores it to its original condition. German chemists attribute the vinous principle to the saccharine matter contained in the fruits. Since I commenced my vineyard the doctrines of Temperance have gained great extension. My great object in the introduction of grapes and wine into our country, was to displace, if possible, the use of ardent spirits; and wine is indeed indispensable for many medical purposes, as is well understood by all physicians.

Much wine is made in the United States from native grapes. The celebrated Swiss establishment at Vevay, in Ohio, which commenced with imported vines, has long since found that those would not be reconciled to the climate, soil, &c., and have replaced them by native grapes—Isabella, Catawba, and several others.

Thousands of gallons of wine from native grapes are made in Indiana and in Ohio. Our wines from native grapes appear to require the addition of sugar to enable them to pass safely through the trying changes of our climate, summer especially. And the want of proper cellars for keeping these domestic wines is felt. Most of our grapes require a pound of sugar to the gallon of wine. The Scuppernong wine of North Carolina is well known as a very good one. The late Mr. Herbemont crossed the native Bland grape with the French Miller's Burgundy, from which he made excellent wine of the quality of Madeira.

Kentucky, Illinois and several of the States make more or less wine from our native grapes. We rarely find a gallon of wine which has not added to it a tenth or fifteenth part of brandy. In time our various soil, climate, situation, &c., will furnish us with great varieties of wine.

Charles Henry Hall—I have had some experience both in raising grapes, making wine, and also in a moderate dealing, occasionally, in wines; and I have personally examined the vineyards, and the wine making of Europe, and the *caves* and warehouses in which it is indispensable to preserve wines. Our learned friend, Dr. Underhill, is generally correct. I must state, however, that the process of fermentation in wines, so far from requiring 105 degrees of heat, by Fahrenheit's thermometer—goes on at 65°. Grapes contain tannin as well as the vinous principle. Nor is it necessary for the grapes to be ripe to make some wines. You can have good wine from the juice of green grapes. From Canada to Texas, grape vines grow, some attaining the tops of our lofty trees. Scuppernong grape is somewhat troublesome to manage for wine, for the berries ripen in succession, and fall off from the branches. Dr. Underhill can make good wine if he pleases to follow the method indicated. We have good wines from the grapes of the north of France, where they frequently do *not* ripen. In the making of wine—when the grapes are mashed and going through the fermentation, a saccarometer (hygrometer) is tried—and the degree must be eleven, for good wine. Your "must," Dr., would probably show eight or nine. Wine is made with as

much facility, nearly, as cider. On the surface of the wine, in the large wine vats used in Europe the *pommace* rises, and is skimmed off. When the wine has become clean, it is put into casks. A second fermentation takes place. I have made wine here from the Isabella grape, and by adding to the grape juice three quarters of a pound of sugar, per gallon, I obtained a wine much like hock. By adding one pound of sugar per gallon, I obtained a good fair wine. By adding one pound and a half of sugar per gallon, I got a fine sweet wine, which, when tasted, by gentlemen experienced in the qualities of wine, not knowing whence this wine came, was pronounced by them a foreign article of a delicious flavor, with fine *bouquet*. This wine I made from ripe grapes.

Dr. Underhill—I remember that wine—it was very fine. The process of fermentation occurs at the temperature of sixty-five degrees of Fahrenheit, and alcohol comes over at about one hundred and five degrees.

Charles Henry Hall—Our object here is to elicit facts from among our own citizens, and to find out how to make our own wines, and of what qualities. The scuppernong is somewhat difficult to manage in making wine of it, but excellent wine is made of that grape.

The hock made from the Isabella grape is a fine wine—wholesome—subacid.

Dr. Adlum did not succeed in his wine making. There is no wine imported here which has not brandy in it. When the makers of wine for export to England or to this country, are asked, why do you put brandy in it? the answer is you have *hot mouths*, and we must gratify them. Medoc wine is rendered of its peculiar properties by depriving it of the tannin and the color. Europe keeps at home all its poorest ill made wines—much like our poor cider. The Montellade wine is one of the most wholesome made. Spain and Portugal drink much wine, but there is not a drunken person to be found there.

Professor Dewey—Wine contains alcohol, but in its condition then it is very different from that which is separated from the combination. There is $1\frac{1}{2}$ per cent of alcohol in small beer—4 to 5 per cent. in cider—22 to 25 per cent. in Madeira. I am pleased to know from Alderman Hall that wine needs no admixture of brandy. It has been generally supposed to be necessary to cause the wine to keep well,

and I deem it an interesting fact that fine wine made by him, without brandy, received the approbation of gentlemen of much taste and judgment in wines.

Dr. Trisk made use of currants with sugar, and was one of the first persons to say that good wine could be made and kept without the addition of brandy. His wine was sent from north to south, without injury, although free from brandy.

Dr. Underhill begged leave to correct an erroneous impression which had arisen from his remarks. He said that it was not his intention to assert that 105° would produce a fermentation in wine, for this takes place at 60° or 65° to 70°, and is caused by the sugar and mucilage. All substances which contain sugar, would, by fermentation, produce the vinous principle, and when heat is applied over 105° alcohol is produced. But alcohol cannot be obtained without the occurrence of a species of decomposition, resulting from the heat applied (105° to 110°.) These, he said, are the views of the German chemists, and as far as his own experience went, he had not found cause to contradict their statements, *as it is impossible to reproduce the perfect wine by again mixing in the alcohol that has been separated by distillation.*

Charles Henry Hall—The Hygeometer is an instrument used in making wine. For example, when the "must" stood at 9° on the instrument, (specific gravity 1,067) it was found too weak to make good wine, consequently refined sugar was added, until the instrument marked 11°, (specific gravity 1,083,) the liquor fermented well, became clear, was of good body, and excellent. By adding more sugar, a sweeter wine was made, resembling Muscat, and by many thought to be as good. The wines made by Mr. Hall, at Harlem, were made according to M. Chaptal's directions, and were those tasted by Dr. Underhill.

Dr. Underhill said he considered it very desirable to preserve the grape during the winter. He read a letter from Mr. James Weir, of 248 Grand-street, stating that a friend of his obtained some kegs containing the ground cork, in which grapes had been imported, kiln-dried it, and packed some grapes of his own raising in it, which kept well until the following July. Dr. U. stated that he had succeeded in preserving grapes in kiln-dried wheaten bran,—that in preserving them, as well as fruits generally, they should be kept in a place as cold as may be without freezing. This temperature, therefore, should not be

lower than 32°, nor above 35°, if possible; he said that carrots and parsnips may be preserved during the winter in the ground.

Mr. Van Wyck said that he had successfully tried saw-dust for preserving grapes, and he believed that vegetables might be treated as stated by Dr. Underhill, but he thought it best and more safe to house them, as leaving them in the ground is a hazardous experiment.

Mr. Hall remarked that the Spaniards export more grapes than almost all the world besides. He said they preserve them by packing in oak saw-dust and hermetically sealing the vessel in which they are put. As to the opinion that carrots and parsnips can be kept good in the ground through winter, he begged leave to differ. Carrots, he contended, cannot be thus preserved, but parsnips may be, although a bad practice. Housing he considered the safest plan, or they may be packed down in sand.

A CONTRAST BETWEEN THE AMERICAN AND EUROPEAN SYSTEMS OF VINEYARDS.

Brinkleyville Vineyard, Halifax Co., N. C.

Mr. Starr—Some individuals not thoroughly acquainted with the true and successful vineyard operations in this country, might suppose that in the above heading, the word *parallel* should have been used instead of *contrast*, and one reason of my supposing this, is drawn from the tenor of a certain conversation of members of the American Institute, as detailed in the "Farmer and Mechanic" on the vineyard business in our country. According to my recollection, from reading said conversation, all but Dr. Underhill, (who is presumed to be most practically and thoroughly acquainted with the vineyard subject) seemed to lean to the opinion that the propogation and culture of foreign kinds of vines, might do in our country. But the opinion of the Doctor was directly the reverse; or, as I understood his expressions on the subject, he coincides with me; who, after about 17 years of careful experience, and all available information, conclude that foreign vines, and foreign modes of vine culture, and wine making, will not succeed as a profitable and permanent business in our country; but that a system of vineyards, *American* throughout, untramelled with foreign rules, can and will succeed to free us from foreign dependence for annual millions worth of wine, and I add, for wines not as good, or as unequivocally healthful and medicinal as made here from native grapes of our own mode of culture and process of wine making.

The first voyagers to North America, specially noticed the abundance of fine grapes every where seen, and compared them with the clusters of "*Eschol;*" but the after settlers of the country failed to realize this special agricultural advantage, and mainly failed, it may be said, through servile regard to foreign vineyards. And in regard to seeing the main cause of the long ill success of American vineyards, it may be asked, 'Has any foreigner ever succeeded here in a vineyard?' The answer is *not one.* And although special inducements have been held out thereto, as in the State of Alabama, plantations have been given by legislative enactments to foreign vintners on condition of cultivating a small portion of land, say an acre, in grapes. But foreign vines and the like, spoiled the experiment. So no American has succeeded in trying to make a vineyard profitable managed in a foreign way, while with American vines and modes of culture and wine making, all desired success has been the result. As instan-

ces of this we may name the late Mr. Adlum, of Georgetown, D. C.; Mr. Herbemont, of Columbia, S. C.; Mr. N. Longworth, near Cincinnati, Ohio (who it is said made 200 barrels of wine in one season,) and Dr. Underhill, perhaps the most extensive vintner in the Northern States. As one honored as an agriculturist with membership in the "American Institute," and perhaps the most successful vintner in the Southern States, it will not, I trust, be deemed presumptuous or vain in me, to add a few facts of my experience on trial of the two systems of vine culture contrasted. So long as I tried the foreign system, disappointment only ensued as to any satisfactory or profitable result.

But whenever I got my *American system* under way, my vintages rapidly increased, till as a sort of extra plantation crop, I have made the past season 40 barrels of wine; every gallon of which, from past experience, I calculate to be good and saleable. And besides this result of my last vintage, I have sold considerable quantities of grapes which were carried away; and also entertained hundreds of visitors, paying entrance fees into my vineyards, of which one hundred white persons entered in one day, besides carriage drivers and servants. Again, my most select native vines, have been vended annually in various parts of the Union; and so far as heard from, desired success has attended their culture. I am most credibly informed that my *Halifax* grape, carried to France, ranks among the *best there* cultivated. I will not omit to say here, that intelligent foreigners visiting my vineyards, declare, as to their knowledge, the Scuppernong grape in particular, to be equal to any, and superior to most in Eastern vineyards as to size and flavor, (a berry $3\frac{1}{2}$ inches round not uncommon, and one found here 4 inches in circumference,) and it is certain that none foreign, unless, perhaps the celebrated Hamburgh in England, can compare with the Scuppernong vine in extent and productiveness. It is conceded an undoubted fact here, that a single Scuppernong vine in the lower part of this State (the native region of this grape) will spread over scaffolding nearly a quarter of an acre, and besides a plenty of its most delicious fruit to the owner and neighbors, yields its five barrels of wine annually. A quarter acre ot twelve vines, cultivated in best style, I knew to yield 500 gallons a vintage, or equal to 2000 gallons per acre, while 800 gallons is an uncommon yield in Europe. The concurrent testimony of the best judges of wines, is, that the genuine well made Scuppernong, vies with any foreign and is found to be most medicinal in the practice of all families in which it is kept for that purpose. Were it not for the outlandish prejudice in favor of foreign wines, the American scup-

pernong itself, might be made ere long to supply half the United States with the best of wine at a very moderate price, and the comparatively low price which it bears, is one cause of prejudice against it. Those that go for the name and credit of having *foreign Madeira* at *three* dollars, say, per gallon, eschew the *better* American at *one* dollar.

But, to return from this digression, and as a further evidence of the productiveness of American vines, after a hundred visitors at a time had partaken plentifully, in the compass of about a quarter of an acre, the grapes abstracted therefrom could not be missed. But apparently the same unvaried sheet of fruit, hung on the canopy above. There is a great contrast in the method of plucking grapes, here and in the east. There they have to stoop to gather them, and here benches and other facilities to stand on in order to reach the grapes are required. The kinds that diversified the entertainment just named, were the Scuppernong, Weller's Halifax, Norton's Virginia, Seedling, Cunningham, and Fragrant, (the last named as well as Scuppernong grapes, diffusing a delightful perfume throughout the premises,) together with a few Isabellas and Catawbas that had survived the rot, their usual calamity in the South.

Although my communication (for your excellent periodical,) is now much longer than I intended when commencing it; yet I venture to add a very few brief rules as to my mode of making wine with sugar as the keeping ingredient. I say keeping ingredient, for whatever are the pretences to the contrary, for sinister or other purposes, I learn from the most reliable sources, that there is scarcely an exception to the fact, that some ingredient is added for the safe keeping of wine in eastern vineyards, although not generally to the juice used by the inhabitants as cider was formerly used here In Europe, brandy made of soured wines, is generally added as their keeping ingredient. A foreigner of undoubted veracity, who had visited the Island of Madeira, informed me that there they put in their wines brandy made from oranges. Oranges in Madeira, are as plentiful it appears, as apples are in America. From most reliable information, they add one-third wine brandy to Port-wine before its exportation. It may be here remarked as a very important fact to counteract the mere theorizing on American wine making, that although far more wine juice per acre is yielded, it is less saccharine in quality in America than Europe; therefore needing more here than there, an ingredient of some kind to be added plentifully enough not only to give zest and strength, but in our hot climate, to guard against the acetous

acid in the first fermentation. I have indeed made wine without any ingredient added, which kept well; when the grapes were not only very ripe, but shrunk by drying. But the quantity of wine is very insignificant for the quantity of grapes; and therefore, for this and other reasons, this mode of wine making is not at all advisable for a living vineyard business. And the wine thus made, is quite as intoxicating when intemperately used, as that made with keeping ingredients, as the alcoholic principle is generated by fermentation in all that is properly called wine.

I now proceed to give the following brief rules for the benefit of vintners generally.

1. As to gathering the grapes. I have the Scuppernong berries, as they ripen in succession (for near two months), shaken down with a forked stick from the canopies above, into a large sheet below. Other grapes I have picked off in clusters by hand.

2. As to mashing the grapes, I do this with a machine of two wooden rollers placed on a frame and tub or vat, and turned by hand at diverse ends. (This machine was invented by Mr. Herbemont, and described in his treatise on wine making.)

3. As to keeping ingredient, and guarding against undue fermentation. I strain the juice as running from the press through several folds of a woollen blanket, and then add sugar, from two to three pounds per gallon, and mix it thoroughly. I then put the prepared juice into a cask fumigated with a sulphur match. I will simply add a remark, that if I wish a highly colored wine of dark grapes, I ferment a few hours the mashed mass, before the last named process.

S. WELLER.

SOILING CATTLE, &c.

Chairman—Our regular subject is soiling of cattle, first, and kitchen garden, next.

Judge Van Wyck—As I described the grazing system at the last meeting, the field remains covered with the litter and the manure of the cattle, and I know of no better condition of the pasture for a

succeeding crop of grass. Here is the fact of like to like verified. The old grass and the manure formed from grass and hay remains, to furnish the means for new grass and hay. Here is the exemplification of the great rule, of returning to the soil that which you have aken from it. Cows, especially, do not like confinement, as required by the soiling plan. They love a quiet pasture, shade, drink from the natural streams, facility of brushing off flies among the bushes, and rubbing against trees. Soiling may be necessary near a city, where land is dear and farms contracted; but in this country, it cannot be necessary to confine our cattle for many years yet to come; our farms generally afford room and range for them.

Judge Van Wyck—In grazing, the grass and litter protects the surface of the soil from sun in the summer, and drenching rains and severe winds and frosts of winter, a great benefit to it. I have tried carrots as food for my cows, and on them one cow yielded five pounds of butter a week, of a fine yellow color, rich and fine like Orange county butter, and this in winter. We may talk as we please to our farmers, but they will pursue the course which is most profitable.

Mr. Lodge—Give to ruminating animals roots morning and evening, and hay or an equivalent between their meals. Carrots are excellent food for them, and can be raised in great quantities. I have raised four hundred bushels of carrots on one-quarter of an acre of land. When the crop is growing thin out and feed the young carrots to the stock. I have raised the Belgian white carrots, which in England have grown in some instances to the weight of fourteen pounds each. Here they can be made to average two or three pounds each, say two pounds; that would be over forty thousand pounds per acre. In their culture, till the land deep; it must be manured well the year before, for fresh manure is apt to canker the young carrots. Pass the cultivator through the rows every ten days, hand hoe the field every three weeks, thin out until at last the carrots stand nearly a foot apart in the rows, which should be about two feet apart. Parsnips are very good for sows with young, and parsnips stand the hardest winter in the ground.

Go spiritedly into the root crops. Horses and cows do not much like parsnips.

Chairman—Feed stock as you will, the great heat of July and August will make them fall off in their flesh, even when fed in the richest fields of clover.

Mr. Lodge—Carrot is an excellent change of food for cattle, even during the summer. And I have exhibited carrots here on the first day of June. The carrot is an object of great interest to our country.

Judge Van Wyck—No soiling plan can give us such milk as we obtain from cows on the open pasture. I never visit the country without perceiving both by taste and smell, the wide difference between the milk of stalled or soiled cows, and the pure delicious milk of the country pastures.

Mr. Lodge—I offer the following method for fattening hogs. Put the ground corn or grain in a vat or barrel; let it remain until it begins to turn sour; give it to the hogs with sufficient water, and it will fatten them faster than any way that I know of.

Professor Mapes—This receipt of Mr. Lodge's is a good one. Mr. Wilson of Brooklyn, has tried it on the large ox. He has used the swill from a distillery fed with shorts, which mixture he suffers to become a little sour before he gives it to the ox. This feed digests easily.

Mr. Wakeman asks Mr. Lodge, what proportion of the cobs should be ground up with the corn?

Mr. Lodge—It is common to begin feeding hogs with corn and the cob ground fine; and as he goes on to fatten, to diminish the proportion of the cobs; to let the feed sour a little in vats or barrels.

Judge Van Wyck—Is there a great difference in breeds of cows as to their milk?

Mr. Lodge—Alderney and Devons give the best milk.

Mr. Wakeman—There is a great difference in the milk of cows of the same breed, and with the same treatment, almost double the quantity of milk, equally good.

Mr. Lodge—So there is—but I prefer good quality in milk to quantity. I have known cows whose one gallon of milk was to be preferred to the six quarts of another.

Judge Van Wyck—But we have as fine milkers as ever were known, whose breeds were unknown.

March 16th, 1847.

MANURES.

Messieurs Biarnois, freres, presented to the club a jar of the French guano, prepared by a company in Paris, who have a capital of six millions of francs employed in its manufacture. Messrs. Biarnois are agents in America, and their office is at 113 William-street. They will give samples for experiment, and can sell the article at thirty dollars per ton. The value of this fertilizer consists in the use of an antiseptic, which combines with the ammonia, and prevents its evaporation, and plants readily decompose the compound as they require it; while the natural guano, for want of the antiseptic, loses its ammonia too rapidly; so that this French guano amends the soil for a length ot time.

M. D. N. Demarest, of Woodbridge, N. J., presented grafts of the orange blush apple, which ripens in August.

GRAPES.

Dr. Underhill said, the interest in the cultivation of the grape rapidly increases, and in a few years it will be very extensively raised. The taste of the grape is natural to man! In sacred writ it is presented as the emblem of all that is most excellent; the more we become familiarized with it, the better we like it. I have seen late publications shewing how to cultivate the grape in America; these may do well for Germany, but not for us; a vineyard cannot be made here as it is there. Cuttings will not answer for us; we must plant our vineyards with vines two, three or four years old, from the slip. The more dry the soil is, the better for the vines. When your vineyard is planted with vines well rooted, the loss is not five per cent. We have a grape called the Alexander; it has a thick skin, and not fit for the table; it cannot be placed at the head of our list of native grapes, as one writer has done. The York Madeira is a fine grape for the table and for wine; but it is a shy bearer; small berries, and few of them half the size of the Isabellas. It is not the synonime of the Alexander, as stated in a late work.

It is said that the black Hamburgh and the sweet water grapes succeed in the open air in our Southern States. I do not believe they will generally ripen; both the heat of summer and cold of winter, are too much for them, except under glass. Our Isabella and

Catawba grapes do well from here to the Gulf of Mexico. We have one hundred and forty grapes, among them the Beaver Dam, Bland, Norton's seedling, &c., and by proper culture, many of these may be rendered good. The Scuppernong will not do here; the Isabella and Catawba grape have already found their way to Europe, and are there highly approved. Germans and others admire these grapes here. The Isabella can be raised in every climate where Indian corn can. It demands proper cultivation. The crop of grapes is more certain than that of any other fruit. The vineyard should be prepared by deep ploughing and thorough work. As to the whole process of planting a vineyard, I will, with pleasure, inform any one who will apply to me before the first of May, at my house, No. 326 Broadway.

Mr. D'J. Brown.—Does not Mr. Longworth, of Cincinnati, plant his vineyards with cuttings? Is it not done in Pennsylvania?

Dr. Underhill.—That plan will succeed in damp soils; but the grapes to be good, must be grown on dry soils. An experienced German tells us that our grapes have more saccharine in them than the generality of German grapes. The plan of watering grape vineyards made by planting slips, is too troublesome, and will not succeed.

Mr. Manice —Will watering answer?

Dr. Underhill —Perhaps so, if they are watered to a great degree. Germans here have tried watering them, and failed of success; the heat in summer is too great. The ground of the vineyard should be ploughed deep, so as to turn the rich surface soil to the bottom, for the benefit of the roots of the vines. In Germany they sometimes sell their wine for three shillings a gallon, and yet take great pains in planting their vineyards. My great object in the culture of the grape is, to produce the fruit for table use; that is more profitable than the wine at one dollar a gallon.

Mr. Fleet, of Long Island.—Does deep ploughing between the vines, injure them; would subsoiling do so?

Dr. Underhill.—It would hurt the roots.

Mr. Fleet.—We do so on Long Island.

A Member.—What is the northern limit for the grape vine in America?

Dr. Underhill.—Isabella can be grown on hill-sides in Vermont, where the rocks gather the heat of the sun by day and retain it through the night; thus keeping off frost. And perhaps this method might answer in parts of Canada.

Mr. Samuel Allen.—What would be the effect of putting pulverized charcoal on the surface of the ground about the vines?

Dr. Underhill.—Increased heat; black always has that effect. The ammonia from the rain and snows may be absorbed, and perhaps the carbon might sink into the soil in form of carbonic acid, and do good. But the heat of our summers would generally cause too great dryness.

We are now in the season of grape vine pruning; all this month will do. Spur pruning is generally done in this city, but this will not do for the open vineyard; there we must cut away the old wood and bring in the new. The less fruit we obtain by close pruning, the more sugar and more sure ripening of the fruit. Our Isabella is constantly improving by culture, and will for fifty years to come go on to improve by careful management, which is not lost upon this grape. In France, the bleeding of the vine by pruning is bad; their vines are more feeble; but it is not so in Germany or here. When the vines have put out leaves, in May, they will not bleed, if pruned.

Mr. Pell read the following:

There is probably no plant more numerous in all countries, than the grape vine. From the remotest antiquity in all ages it has been considered the symbol of happiness and type of abundance. It belongs to Linnæus's first order, and fifth class. Pentandria Monogynia, the varieties are almost innumerable, and differ not only in size, but taste, shape, color and aroma; soil and climate change at once its nature and the relative proportion of ingredients composing it, which is proved by the fact that no kind of grape succeeds the same in all climates. If, for instance, you were to bring a vine from the Cape of Good Hope, and plant it in our latitude, it might possibly, if it did not die the first year, bear a crop; but it would be very inferior as I have proved. On the other hand, if one of our vines were removed to the Cape, the fruit would be much improved; for the reason that no plant is benefitted by, or enjoys more the solar influence, than the grape vine; and in proportion as it receives that heat, the saccharine matter predominates. On this saccharine you

must depend for the quality of your wine, the best of which is made between the thirty-third and fifty-first degrees of latitude. Cologne, in Germany, is the city farthest north, and the island of Cyprus the most southern limit of the best wine regions.

Wine made from grapes grown in the vicinity of the northern line, has a very small quantity of saccharine, and is consequently unpleasant; for example, the Moselle. Those grown in the immediate vicinity of the southern boundary, contain a very large proportion of sugar, and are deficient in the acid; consequently, the wine made from them is sweet and sickish, such as the Malaga. They are mostly dried in the sun and exported as raisins.

The most delightful wines are those made from grapes grown in the centre between the boundaries, as at Oporto and Bordeaux. England, to be sure, has the same latitude in the southern portion of it as some good wine districts, and would grow fine grapes were it not for the humid clouds that always overhang it, causing mustiness and mould; plainly showing that without the rays of the glorious sun, you cannot grow fine grapes; therefore, let your aim be so to plant as to reflect the rays of the sun constantly upon your vine, root as well as branch. Side-hills having a southern exposure, will be found the best. Copy after those who have devoted the lives of generations to the cultivation of the vine; the inhabitants of the country contiguous to the Rhine, the Appenines and Hungary. You will there find terraces on steep side-hills, sustained by walls, one above the other, hundreds of feet in extent, presenting the most magnificent appearance that the eye of man ever beheld; staircases of splendid grapes, on all varieties of soil, rich, dry, loamy, calcareous, sandy, gravelly and even stony, no matter what its nature may be as long as it is dry. Nature does not abhor a vacuum more than the vine does a wet soil. If you desire vines of great luxuriance, and bearers of immense quantities of grapes, feed the roots with bone earth, feathers, hair, charcoal dust and human ordure; but they will not make wine. If the latter be your object, plant them in a loam, sandy, or calcareous soil, moderately enriched, kept well pulverized, and annually dressed with their own leaves and tendrils.

In Italy, and other hot climates, the vines are encouraged to the tops of the highest trees, from which they are carried to others planted in rows for the purpose, and thus hang in the most luxuriant festoons imaginable, loaded with splendid grapes. The object is to

shade them, and thus shield them from too much heat. The French grow them as we do corn, in hills, and cut them close to the ground when they trim, having two objects to accomplish; the one to obtain fire-wood, and the other, to expose them to the reflection of the sun's rays upon the earth.

In Spain, the vines are trained along the ground. I was reading some book the other day, in which it was stated that the "same climate, soil, and mode of culture often produce wines of very different qualities. Situation and aspect alone, all other circumstances being the same, make a very great difference. The same vineyard, according as its different parts, have a northern or southern aspect, will produce wines of opposite characters; as also will the same hill at its summit, middle and bottom. In cold countries, the southern slope of a rising ground is the most favorable situation, and in warm climates, the last is found to be generally the best." This accounts for the vast varieties of wines; the same vineyard may produce wines having distinct properties.

In some parts of France, the wine growers imagine that vines should not be matured at all, as they say it affects the flavor of the grape. In Alto Douro, the port wine district of Portugal, there exists a law forbidding the use of manure on grape vines. In this country, unfortunately, too little attention has been paid to the cultivation of this most important of all fruits; there is no other in existence capable of making wine, for the reason that it contains in a larger proportion than any other fruit, tartaric acid; which, combining with potash, forms bitartrate of potash, usually known by the name of tartar, which is always held in solution in the juice of grapes; if you taste grapes when half ripe, this tartar predominates to a great degree, and has a disagreeable flavor; as the fruit ripens, the saccharine increases and overcomes it. Gooseberries and currants contain acetic, citric and malic acids, which, being soluble even in water, remain in the liquid made from those fruits, and are injurious to many constitutions; therefore, it cannot properly be denominated wine. Dry wines are so called when the saccharine matter and fermenting matter decompose each other by their combined action, and sweetness cannot be perceived; these wines are considered the best, such as port, Burgundy, &c.

Sweet wines are those in which saccharine predominates to such a degree as to render it impossible for the ferment to decompose it. Wine is called brisk, when the fermentation is stopped by being bottled, before the carbonic acid has escaped; when confined, the fer-

mentation continues, and is eventually absorbed by the wine in a condensed state; when the cork is withdrawn it escapes from the bottle with a report. The manufacturer, by judicious management, can make dry, sweet and brisk wine from the same juice. Bouquet of wines is the aromatic odour which is perceived when fine wines are exposed to the air after being bottled.

The aroma is a principle derived from the fruit. America will yet become the vineyard of the world. We have every species of climate, and soils capable of producing grapes equal to any grown. Our whole country is overrun with vines which appear to be indigenous, and some of them yield berries of immense size, and every shade of color. In Louisiana, Ohio, and Florida, much fine wine is made from native grapes. Then we have the Scuppernong, Catawba and Isabella, from all of which, most delicious wine has been expressed.

In South America, vineyards are very numerous, and in the vicinity of Buenos Ayres, exceedingly productive, and produce red, dry, white, brisk and sweet wine. In Peru, delicious grapes of very large size are grown. Many of the native grapes found growing wild in our woods at the North, are much larger than any foreign grapes I ever saw abroad, and only require careful cultivation to enable us to obtain fine varieties already acclimated.

We shall become a wine making people; and that day is not far distant; as we are weekly adding to our population foreigners, who have always been accustomed to a national beverage expressed from the grape, and without which, so strong is habit, they cannot exist. Let them commence its culture, and demonstrate its advantage, and I assure you our enterprising countrymen will not long let them enjoy a monopoly. Until that happy day arrives, you may depend upon it, no human exertion can arrest the progress of the habitual drunkard. Let one-third of the enormous sums annually expended by philanthropic persons and communities for the purpose of coercing and constraining their fellow man to give up, against his will and inclination, the use of ardent spirits, be appropriated to the encouragement of the vine-grower, and take my word for it, the rising generation will be a temperate people.

During a long absence abroad, I never saw in vine-growing districts, a drunken man, and it was because all those countries have a national and cheap beverage, made chiefly from the juice of the

grape, of which they may partake *ad libitum*, without producing the baneful effects of our ordinary liquors.

There is not a man among us who cannot make his own wine; it is only necessary to pick the grapes, express the juice, and place the liquor in a clean barrel, let it ferment freely, and bung it up tight. If you would preserve your grapes for dessert, place them in some porous vessel and cover them with the sand, after having sealed the stem with sealing wax, or put them in a tin hermetically sealed box, and exhaust the air.

JERUSALEM ARTICHOKE.

The following communication was made from Hon. SIDNEY WELLER, M. C., from N. C.:

It may not be too presumptous in me as a member of the American Institute to request the conversational members to take up the subject of the Jerusalem Artichoke, and particularly to throw all the light that can be had on the question: "Whether my position is feasible that the Jerusalem Artichoke can be made a substitute for the Irish potato."

I venture to announce the above named vegetable, very important to our agricultural interest, in at least three respects, viz:

1st. As a substitute for the Irish potato, which it is no longer safe to cultivate on account of its destructive disease.

2nd. As the most profitable crop that can be made for fattening and store feeding swine.

3rd. As a most important auxiliary renovator of the soil where grown.

In glancing over the "Patent Office Report of 1845," my eye, Mr. Editor, met some extracts therein of my communications on vineyards, improvement of the soil, and the artichoke, (pages 321, 362, and 932.)

As may be seen by turning to the first cited page of said report, I set forth there, "some striking advantages in the culture of the common kind of artichoke," and stated I was about to try the culture of the Tennessee kind, new in this region, and said to be of extraordinary product. I did so, with these also some others for seed, that came from the State of Georgia, which I learned were also the Jerusalem; and I found the two last named identical, or of like qualities, and of wonderful yield. By reading the cited extract in said report, and being reminded I had promised to communicate to the farming public the result of my experiment with this kind of artichoke, and for the sake of method, I choose to write under the divisions named.

But ere pursuing them directly, I will describe the Jerusalem, and my manner of their culture, and gathering. The tubers of this sort are long and smooth, and thus unlike the common, which are oval and rough; though the former are not so large as the latter. The Jerusalem are not remarkable for size, (looking like small sweet potatoes,) but for multitudes, as the product is so good as to fill the ground in every direction where planted. My rates of product per acre on different lots, as nigh as I could ascertain by detached places dug, were from eight to twelve hundred bushels per acre. I planted rows of the common and Jerusalem, side by side, to test the comparative yield, dug twenty feet in a row of each kind. The product was, six quarts of the common, and a bushel and a half and six quarts of the Jerusalem; indicating that in drills three feet apart and stocks a foot in the drill, the product of the common would be short of 150 bushels per acre, and the Jerusalem upwards of 1,200 bushels. The former, at a critical time of growth, were injured by a dry spell, causing some of their leaves to fade; but all the leaves of the latter continued green through the season. I consider the most eligible distance to plant the Jerusalem is about 4 feet drills, and small pieces of the tubers put twelve inches or more in the drills, and the ground to be kept clean and loose till the plants shade it well, which they soon do. Less work is necessary for artichokes than corn.

My practice of gathering the Jerusalem artichoke is to plow flush the ground, and small hands to follow the plow to pick up all the tubers made visible, while the balance left, (one half perhaps) was left to be rooted for by swine. But designing brevity, I must at once proceed to the heads before named. And

1st. In favor of the substitution of the said artichoke for the Irish potatoe, it may be asserted that the latter grows well wherever the former does. And it may be, ere long, that Ireland itself will substitute, as sustenance for its millions, the Jerusalem artichoke for its no longer reliable potato. The prodigious and certain yield will compensate sufficiently for the comparatively less mealy and nutritious quality than the potato. And improved modes of cooking may soon obviate these comparative defects of the artichoke. I see it stated in a letter published in the Albany Cultivator, written by the distinguished agricultural tourist, Solon Robinson, that he much relished a dish of sauce made of the Jerusalem artichokes cooked as turneps or Irish potatoes, or boiled (often with meat) and mashed up, as common in Tennessee and other Western States.

A century ago, or so, the afterwards called Irish potato was cultivated as a curiosity only in gardens, and not deemed a good eatable vegetable. But in time it became the principal food of millions of the human race. And I add, with sadness, that more subsequently its dire disease has disappointed millions of their daily food. But:

2dly. The Jerusalem artichoke is the most profitable of crops for feeding swine. I venture to assert that on soils where fifty bushels of corn can be made per acre, 1,000 of these artichokes can, which will go fourfold, at least, further than said corn towards fattening or store feeding swine. And I learn that, from repeated experiments ascertained, one-fifth of the corn usual for fattening hogs suffices with the help of said artichokes, and how little comparative trouble with either fattening or store feeding hogs when turned into a lot of artichokes to root for them at leisure, or perhaps all winter as well as spring and fall in southern climes. But:

3dly. Said artichoke is a great renovator of the soil where cultivated. The growth of the tops is so luxuriant (12 to 15 feet high and very branching) that incorporated into the earth, its litter cannot but enrich the soil more than the culture of the plants exhausts. And suppose its tops soiled, or cut off measurably in the season of growth, (and thus excellent summer food for milch cows, without injuring the yield of the plant, as I have tried,) or cut before hard frosts for cattles' winter food, and still their eventual benefit for manure is realized. Various are the ways of using the tops to improve land, but the most direct improvement, I consider, is to press them down into

the deep drill or furrows, into which you have previously planted a new lot of pieces of the tubers, all then well covered with the plow. The litter of any plant is found to be the best manure for that plant. But to conclude, these hastily written, and therefore somewhat desultory remarks, on the excellent vegetable in question, are most respectfully submitted.

INDEX.