Date Due

TRANSACTIONS

OF THE

AMERICAN INSTITUTE

OF THE

CITY OF NEW-YORK,

FOR THE YEAR

1850.

ALBANY:
CHARLES VAN BENTHUYSEN, PRINTER TO THE LEGISLATURE.
1851.

AMERICAN INSTITUTE.

TRUSTEES AND COMMITTEES FOR 1850.

TRUSTEES.

COMMITTEE ON FINANCE.

MANAGERS OF THE TWENTY-THIRD ANNUAL FAIR.

COMMITTEE ON AGRICULTURE.

COMMITTEE ON COMMERCE.

COMMITTEE ON MANUFACTURES, SCIENCE AND ARTS.

COMMITTEE ON THE ADMISSION OF MEMBERS.

Alanson Nash,
Henry Meigs,
Henry P. Blackman,
George F. Barnard,
John Campbell.

COMMITTEE ON CORRESPONDENCE.

George Bacon,
John P. Veeder,
Alanson Nash,
Ralph Lockwood,
Charles Henry Hall.

COMMITTEE ON THE LIBRARY.

Livingston Livingston,
Ralph Lockwood,
Jacob C. Parsons,
H. P. Blackman,
Gordon L. Ford.

State of New-York.

No. 149.

IN ASSEMBLY, FEB. 15, 1851.

ANNUAL REPORT OF THE AMERICAN INSTITUTE.

New-York, *February* 14, 1851.

To the Honorable
Henry J. Raymond,
Speaker of the House of Assembly, New-York:

Sir—I herewith transmit the Ninth Annual Report of the American Institute of the city of New-York.

Very respectfully,
Your obedient servant,
ADONIRAM CHANDLER,
Corresponding Secretary.

NINTH ANNUAL REPORT

OF THE TRUSTEES OF THE AMERICAN INSTITUTE.

New-York, Dec. 31, 1850.

In conformity to the law passed May 5, 1841; the Trustees of the American Institute, present herewith to the New-York State Agricultural Society, a report of their proceedings in the department of agriculture for the year 1850; containing detailed statements of their exhibitions of pure breed and other useful farm stock, and of the agricultural, horticultural, and floral productions of our country, as presented at our late 23d annual fair at Castle Garden in the city of New-York.

The exhibition of agricultural implements was unusually large, presenting to the examination of visitors, articles for almost every conceivable use in the process of cultivation, and all of the most excellent workmanship.

Many of the plows were tested by a committee at Tarry Town, and their draft, weight, width and depth of furrow, will be found among the reports herewith included, and also reports of the plowing and spading matches held at the same place. These exhibitions were attended by a large concourse of agriculturists, and were considered to be instructive, and highly satisfactory.

The application of chemical science to agriculture, is annually presenting us with results of vast importance. The great mass of those who are devoted to rural pursuits know very little concerning these developments; the means of acquiring the requisite information, is not yet placed within their reach.

It is not to be expected that instruction will be very rapidly diffused in regard to scientific cultivation, requiring as it does, study, skill, discernment, and practical experience. It may be hoped, however, that measures will be adopted under the fostering care of the State, having for their object the gradual dissemination of scientific instruction in reference to the cultivation of the soil, which will eventually prove to be of vast importance to the husbandman.

A careful analysis of the cereals and all other important products grown on our own soil is needed. It is true, we have analyses of similar products, grown on the soils of Europe, by men eminently skillful. The soil and climate of Europe differs from our own; and plants, it is believed, may in their growth take up and incorporate ingredients which are not essential to their perfect development. Whatever difference may exist in their constituents would thus be shown, and perchance lead to the correction of essential errors in cultivation.

Accessible means for every cultivator to obtain a correct analysis of his soil is of very great importance. To effect which will require time, and it may never be accomplished except through the agency of a well devised system of scientific agricultural instruction. We hope the time may not be very distant when every town and village, will possess its chemical laboratory, with well instructed and skillful agriculturists, competent to conduct such analyses.

When we survey the vast extent of our Union; its diversity of climate, its mineral stores, its capacity for production, its admirable adaptation for internal commerce, through inland seas, navigable streams, canals, the constantly increasing facilities of railroads; and consider the natural increase of population, augmented almost daily by the immigration of thousands from foreign lands, seeking a participation in the privileges of American citizenship, all to be sustained by the product of labor; it would seem short sighted to suppose that we are to remain dependent on any other nation for a single article which enters into the list of our daily or contingent wants; for we can produce them all;

the labor necessary for their production, must sustain the millions who are dependent upon it. The products of the manufacturer, mechanic, and artisan, must be exchanged for the products of the cultivator, and these exchanges should form within our Union an internal commerce such as no nation has before exhibited. Short sighted legislation may retard the development of this mighty fabric, but it will expand as intelligence advances, and this should be accelerated by the bounty of the State, judiciously bestowed.

We are happy in feeling assured that the members of the American Institute are ready at all times to lend their aid in promoting objects of public utility, and especially such as tend to the advancement of agriculture, commerce, manufactures, and the arts.

It may not be improper here to state, that the library of the Institute has been increased during the past year by the purchase of 1100 volumes of agricultural, mechanical and miscellaneous works; making the whole number of volumes to exceed 5,500. Under new arrangements it has been made a circulating library among members. Strangers who are tarrying in the city for short periods, can have free access to it, on being introduced by a member; where they will find the leading periodicals of Europe and America, and also the most prominent newspapers of the United States.

JAMES TALLMADGE,
LIV. LIVINGSTON,
ROBT. LOVETT,
ROBT. L. PELL,
EDW'D. T. BACKHOUSE,
ADONIRAM CHANDLER,
HENRY MEIGS, *Trustees.*

FINANCES.

The following is the financial condition of the American Institute on the 1st day of February, 1851:

Balance in the treasury February 15, 1850,		$3,521 67
The Receipts of the year have been,		
From managers of the 22d Fair, balance,..	$923 86	
Managers of the 23d Fair, 1850,....	7,724 63	
Members,........................	2,213 00	
Certificates of awards,............	47 00	
Sales of Transactions,............	3 00	
Duplicate silver medals,..........	25 00	
Rent of room No. 333 Broadway,..	200 00	
Rent of premises No. 351 Broadway,	2,166 66	
		13,303 15
Total,............................		$16,824 82

PAYMENTS.

Paid course of lectures,................	$828 89	
Books and periodicals for library,....	898 22	
Newspaper subscription,............	73 00	
Advertising,......................	58 13	
Fuel, coal,......................	38 50	
Light, candles, oil, &c., ...	39 16	
Paper, blank books and stationery,..	105 36	
Printing, ...	127 38	
Chairs and settees,................	116 20	
Repairs of stoves, &c.,............	33 20	
Carpenters work, repairs, &c........	81 09	
Clock,........................	10 00	
Insurance,......................	98 00	
Storage, ...	60 00	
Taxes,........................	437 87	
Interest on bond and mortgage,......	1,625 00	
Rent 333 Broadway, November to May, 1850, ...	500 00	
Carried forward,......................		$

Brought forward,			$
Paid wood cuts, &c., for Transactions,		$159 75	
Agent's expenses at Albany,		59 85	
Freight and cartage,		3 37	
Surveying lot, rear 351 Broadway,		10 00	
Filling up certificates,		3 00	
Consultation fee, "lease,"		5 00	
Commission on collections,		2 90	
Professional services and damage occasioned by falling of sign,		100 00	
Hire of steam engine, &c.,		100 00	
Expenses of Farmers' Club reporting 11 meetings,	$27 50		
Papers for distribution,	18 47		
		45 97	
Salary of Agent November, 1849, to November, 1850,		1,000 00	
Salary of Recording Secretary,		262 50	
Salary of Clerk,	$700 00		
do Resolution of Institute,	150 00		
		850 00	
Salary of Librarian to Jan. 1, 1851,		269 66	
Salary of messenger,		72 37	
Petty cash expenses, postages, subscription to small papers, advertising, cleaning, &c., &c.,		170 68	
		$8,245 05	
Loan on bond and mortgage,		5,000 00	
			13,245 05
Balance in the treasury Feb. 1, 1851,			$3,579 77

REPORT OF THE BOARD OF MANAGERS

OF THE

TWENTY-THIRD ANNUAL FAIR.

The Board of Managers of the twenty-third annual Fair of the American Institute, respectfully

REPORT:

That, in accordance with the usual arrangements, the Fair commenced at Castle Garden on the first day of October, and closed the twenty-third of the month. The attendance of visitors, under the generally fine weather prevailing during the exhibition, shows a steady increase from previous years. The articles in the various departments were of a character in novelty, utility and beauty to reflect the highest credit upon American Industry; indeed, the exhibition of 1850, if it could have been transferred without injury to its materials, or its arrangements, into the approaching World's Exhibition, would have sufficiently honored our great country.

The number of entries in the Manufacturing and Mechanical Departments, number,.....................	2,289
In the Agricultural and Horticultural Departments,....	237
At the Cattle Show,................................	304
Making a total of,....................	2,830

The past Fair was again a witness to the good policy which dictated the resolution of the Institute of a former year to erect a machinery room; had it been double its present size the machines on exhibition could have been displayed to better advantage. Connected with this department an extraordinary but absolutely necessary expense has been incurred of new boilers, the disbursements for which will be found in the usual statements of the receipts and expenditures from the Finance Committee, of which Mr. William Ebbitt was the zealous and acceptable chairman.

The Annual Cattle Show was held at Madison Cottage, and the attendance of graziers, and those interested in the improvement of live stock, was quite gratifying. The details of this part of the exhibition will be found in the report of that committee.

The Committee on Premiums had as usual a most arduous and embarrassing duty, which, however, was performed to the general satisfaction of exhibitors, a copy of which will be found annexed. The Managers cannot in justice fail to pay a grateful duty to the ability and careful industry of its chairman, Mr. Joseph Torrey, who discharged his office with undoubted satisfaction.

The Anniversary Address was delivered by Samuel Greene Arnold, Esq., of Rhode Island, and was an able and eloquent effort. Mr. Arnold has shown himself as acute in observation (improved in result by foreign travel,) as forcible in illustration. Other addresses were given at Castle Garden during the three weeks of the exhibition to the interest and edification of the various spectators.

The Managers felicitate their fellow members of the Institute upon the increasing activity in gratifying results to the cause of American industry over the country. Its motto is ever excelsior, and the olden saying—"There is no new thing under the sun," can never be established in this land of unintermitting progress. Let us, however, not stay our exertions; there can be no excellence without hopeful and steady labor. It will be reward enough for us to know that, in many after years, posterity will find no mention of the dead more honorable than to say, "he was a member of the American Institute which gave giant pushes to American industry in its childhood."

The following is a condensed statement of the Receipts and Expenditures of the Twenty-third Annual Fair.

RECEIPTS.

To cash received from sales of tickets at Castle Garden,

	Tuesday, October 1,......		$210 34	
"	Wednesday, October 2,....		333 34	
"	Thursday, "	3,....	638 00	
"	Friday, "	4,....	800 00	
"	Saturday, "	5,....	864 50	
"	Monday, "	7,....	1,061 00	
"	Tuesday, "	8,....	1,367 00	
"	Wednesday, "	9,....	1,754 93	
"	Thursday, "	10,....	1,723 34	
"	Friday, "	11,....	1,280 50	
"	Saturday, "	12,....	1,254 50	
"	Monday, "	14,....	1,448 34	
"	Tuesday, "	15,....	1,531 84	
"	Wednesday, "	16,....	1,658 34	
"	Thursday, "	17,....	1,372 34	
"	Friday, "	18,....	709 50	
"	Saturday, "	19,....	892 84	
"	Monday, "	21,....	660 50	
"	Tuesday, "	22,....	1,007 50	
"	Wednesday, "	23,....	762 22	
				$21,330 87

To cash received at Cattle Show,

	Wednesday, October 16,...		$135 00	
"	Thursday, "	17,....	207 18	
"	Friday, "	18,....	71 84	
				414 30
"	Rent of stands,....................			210 00
"	Sales of lumber at Cattle Show,......			183 97
"	Sales of lumber at Castle Garden,....			203 75
"	Broken show cases,................			4 25

Carried forward,........................ $22,347 14

Brought forward,			$22,347 14
To cash rec'd for broken chandeliers,			3 25
" Sales of oil barrels,			3 75
To cash received from Hon. M. Van Schaick for silk premiums,			100 00
To cash premium on silver,			32 52
			$22,486 66
Less discount on uncurrent money,			67 52
			$22,419 14

EXPENDITURES,

By Printing and Publication Committee.

Printing circulars, blanks, invitations, tickets, handbills, &c.,	$297 25		
Printing addresses,	36 14		
Newspaper advertisements, posting bills, &c.,	166 96		
		500 35	

By Committee of Arrangements.

Muslin for tables,	$22 59		
Glazing cases, windows, &c.,	47 01		
Cleaning, painting garden, &c., at close of Fair,	119 35		
Bleaching muslin, rosettes and sundry expenses,	60 04		
		248 99	

By Regatta Committee.

Stake boats and services of men,	$24 00		
Printing and posting bills,	7 25		
		31 25	

By Agricultural Committee.

Carpenters' work erecting sheds, &c., at Cattle Show,	$481 48		
Clerks and laborers,	44 38		
Carried forward,	$525 86	$780 59	$22,419 14

Brought forward,......	$525 86	$780 59	$22,419 14
Refreshm'ts for judges & com'tees,	75 00		
Rosettes for cattle,pails, &c.,...	29 72		
		630 58	

By Horticultural Committee.

Clerks, laborers, &c.,..........	$333 24	
Use of crockery, boxwood, painting stands, &c ,............	48 49	
Printing labels and making tins for flowers,................	23 13	
		404 86

By Committee on Light.

Gas light,....................	$360 35	
Oil,.........................	202 30	
Camphene and candles,........	42 25	
Chandeliers purchased,.......	300 00	
Use of chandeliers, lamps, &c.,	121 11	
Gas pipes and fixtures,.......	35 00	
Services of attendants,........	126 47	
		1,167 48

By Machine Committee.

New boilers,................	$1,626 50	
Erecting engine and shafting,..	617 45	
Fuel,......................	72 00	
Mason work, varnish, croton water, &c., ...	55 98	
Superintendent,..............	94 00	
		2,465 93

By Finance Committee.

Ticket sellers and counters,....		157 50

By Police Committee.

Day police,..................	$355 00		
Evening police,..............	101 00		
		456 00	
Carried forward,...............		$6,062 94	$22,419 14

Brought forward,		$6,062 94	$22,419 14
By Ticket Committee.			
Door keepers,	$103 00		
Ticket counter and stamping tickets,	40 52		
		143 52	
By Labor Committee.			
Superintendent,	$152 00		
Clerks,	254 50		
Night watch,	259 50		
Laborers,	319 25		
		985 25	
By Committee on Music.			
Transportation of bands,	$103 50		
New-York Harmonic Society,	30 00		
Expenses of bands,	163 79		
		297 29	
By Refreshment Committee.			
Dinners for Managers while detailed on duty, and for guests from a distance,	$574 75		
Refreshments for committees and lady judges,	41 88		
		616 63	
Miscellaneous Bills.			
Rent of Castle Garden 21 days at $75 per day,		1,575 00	
Carpenters work and lumber, &c., for extension of machine room, fitting up inside of garden and covering bridge,		1,024 41	
Broadway Tabernacle for the Anniversary Address,		75 00	
Reporting speeches,		25 00	
Muslin for flags,		31 28	
Carried forward,		$10,836 32	$22,419 14

Brought forward,	$10,836 32	$22,419 14
Cloak for orator, (cloth presented,)	25 00	
Flag poles and mounting,	47 99	
Loan of tent,	16 25	
Fireworks,	150 00	
Damage to ladies dresses,	40 00	
Stationery, paper, &c.,	32 61	
Sundry items,	19 25	
		11,167 42

By Premium Committee.

Gold and silver for medals and striking,	$1,993 74	
Silver cups and silver ware,	426 05	
Medal cases,	130 50	
Books for premiums,	128 11	
Clerk hire, free postage stamps, use of show case, &c.,	65 94	
Engraving,	1 00	
Cash premiums,	345 00	
Cash premiums instead of cups, and medals,	306 75	
Cash, minors' premiums,	130 00	
		3,527 09

Making a total expenditure of	$14,694 51
Which, being deducted from the receipts, leaves,	$7,724 63

which has been paid into the Treasury of the American Institute.

It is estimated that it will require about $1,200 to pay for outstanding premiums and printing not yet completed.

The following is a list of the premiums awarded:

92 Gold medals.
85 Silver cups.
326 Silver medals.
510 Diplomas.
136 Volumes of Agricultural works.

$132 and twenty-seven certificates, (apprentices' and minors' premiums.)

$30 and four bronze medals, Van Schaick premiums.

$320 Cash premiums.

The Premium Committee estimate the cost of the premiums at four thousand dollars.

WM. HALL, *Chairman.*

JOSEPH TORREY,
JAS. R. SMITH,
ISAAC V. BROWER,
JAS. R. WALTER,
HEMAN W. CHILDS,
ALEX. KNOX, Jr.,
MARTIN E. THOMPSON,
RALPH HALL,
EDWIN SMITH,
WM. EBBITT,
H. P. BLACKMAN,
WM. C. ARTHUR,
JACOB C. PARSONS,
GORDON L. FORD,
JOHN A. BUNTING,
THOMAS W. HARVEY,
HENRY SPEAR,
JOHN G. BELL,
GEO. C. MANN,
F. W. GEISSENHAINER, Jr.,
LEWIS G. MORRIS,
JOSEPH THOMPSON,
JOHN M. REED,
PETER B. MEAD,
ADONIRAM CHANDLER, *ex officio.*

Managers.

LIST OF PREMIUMS

AWARDED BY THE MANAGERS OF THE TWENTY-THIRD ANNUAL FAIR OF THE AMERICAN INSTITUTE, OCTOBER, 1850.

AGRICULTURAL AND HORTICULTURAL DEPARTMENT.

For Premiums on Cattle and other Farm Stock, see Report of Com. on Agriculture.

FARMS AND MARKET GARDENS.

E. H. Kimball, Flatlands, L. I., for the best farm, of not less than 100 acres. Silver cup, $20.

J. J. Mapes, Newark, N. J., for the best market garden. Silver cup, $10.

AGRICULTURAL PRODUCTIONS.

J. P. Giraud, Jr., Bergen, N. J., for the best varieties of Indian corn. Silver cup, $8.

Roswell L. Colt, Paterson, N. J., for the best 40 ears of white corn. Farmers' Encyclopedia.

J. P. Giraud, Jr., Bergen, N. J., for the best 40 ears of yellow corn. Colman's European Agriculture.

Roswell L. Colt, Paterson, N. J., for the best 40 ears of brown corn. Allen's American Farm Book.

Timothy F. Tillson, Rosendale, N. Y., for the best bushel of wheat. Silver cup, $8.

E. H. Kimball, Flatlands, L. I., for a bushel of superior wheat. Farmer's Encyclopedia.

Wm. H. Hughes, Mateawan Point, N. J., for the best bushel of rye. Silver medal.

George Nesbitt, Hobart, Delaware Co., N. Y., for the best bushel of oats. Silver medal.

James Weeden, Newtown, L. I., for the best bushel of buckwheat. Colman's European Agriculture.

Gregory E. Harmon, 6 Sheriff-street, N. Y., for the best bale of hops. Colman's European Agriculture.

James Weeden, Newtown, L. I., for a superior specimen of Mediterranean wheat. Farmers' Encyclopedia.

Roswell L. Colt, Paterson, N. J., for several varieties of fine corn. Silver medal.

John O'Donohue, Middle Village, L. I., for a sample of white corn. Trans. Am. Ins.

J. J. Mapes, Newark, N. J., for a sample of Evergreen sweet corn. Trans. Am. Ins.

FLOUR AND MEAL.

Hecker & Brother, 201 Cherry-street, N. Y., for the best barrel of wheat flour. Silver cup, $8.

Mumford Mills, Clark and Coleman, agents, N. Y., for a barrel of superior flour. Silver medal.

J. Lathrop, Leroy, N. Y., for a barrel of extra flour. Colman's European Agriculture.

Timothy F. Tillson, Rosendale, N. Y., for the best barrel of rye flour. Silver medal.

Francis A. Esty & Co., 88 West-street, N. Y., for a barrel of superior rye flour. Farmer's Dictionary.

Atlantic Dock Mills, Brooklyn, E. Bronson, agent, for the best barrel of steam-dried meal, by Stafford's process. Silver cup, $8.

Adam Wandling, Warren Co., N. J., for a superior barrel of kiln-dried meal. Stephen's Book of the Farm.

Hecker & Brother, 201 Cherry-street, N. Y., for superior farina. (Silver Medal having been before awarded.) Diploma.

PRODUCTS OF THE DAIRY.

Butter.

Josephine L'Hommedieu, Cortlandville, N. Y., for the best specimen of butter. Silver cup, $8.

A. Howell, Goshen, N. Y., for the second best specimen of butter. Silver medal.

Thomas Helms, Goshen, N. Y., for the third best specimen of butter. Allen's American Farm Book.

Arminda L. Hommedieu, Cortlandville, N. Y., for the next best specimen of butter. Trans. Am. Ins.

L. Weed, Orange Co., N. Y., for a specimen of extra fine butter. Farmer's Dictionary.

CHEESE.

P. W. Stebbins, 14 Front-street, N. Y., for the best specimen of American dairy cheese. Silver cup, $8.

Isaac Carpenter, 14 Front-street, for the second best specimen of American dairy cheese. Silver medal.

Archibald Burlingame, 14 Front-street, for the third best specimen of American dairy cheese. Colmans's European Agriculture.

Wallace W. Dowd, Ashtabula Co., Ohio, for the next best specimen of American dairy cheese. Farmer's Encyclopedia.

WOOL.

J. B. Smith, Wolcotville, Conn., for full blood saxony wool. Silver cup, $10.

WINE.

L. Rehfuss, Cincinnati, Ohio, for wine made from the Catawba grape, of good quality, and one that by suitable age, and full maturity, promises to be of very fine quality. Diploma.

FLOWERS.

J. M. Thorburn & Co., Astoria, L. I., for the largest and best display of dahlias. Silver cup, $15.

William Beekman, corner of 51st-street and 8th Avenue, for a splendid display of dahlias. Silver cup, $10.

Mateo Donadi, Bloomingdale, for a superb display of dahlias. Silver cup, $8.

John E. Rauch, Brooklyn, L. I., for a beautiful display of dahlias. Silver medal.

H. A. Graef, Brooklyn, L. I., for a display of splendid dahlias. Boudoir Botany.

A. P. Cumings, Williamsburg, L. I., for a fine display of dahlias. Parlor Book of Flowers.

Charles Morè, corner of 98th-street and 3d Avenue, for a good display of dahlias. Downing's Horticulturist.

D. Boll, corner of Broadway and 50th-street, for a display of fine dahlias. Hovey's Magazine of Horticulture.

Phelan & Sons, corner of 5th-street and 1st Avenue, for a good show of dahlias. Parsons's Rose Manual.

Mateo Donadi, Bloomingdale, for the largest and best display of roses, and cut flowers. Silver medal.

Charles Morè, corner 98th-street and 3d avenue, for a beautiful display of roses and cut flowers. Boudoir Botany.

D. Boll, corner Broadway and 50th-street, for a splendid display of roses. Parlor Book of Flowers.

Phelan & Sons, corner of 5th-street and 1st Avenue, for a fine display of cut flowers. Parsons's Rose Manual.

J. B. Lenoir, 45th-street, Bloomingdale, for a beautiful display of roses. Parsons's Rose Manual.

Walter Park, 805 Broadway, for the best bouquet. Silver medal.

Mrs. A. A. Smith, Sydney place, Brooklyn, for the best display of bouquets. Silver medal.

Mrs. S. A. Penniman, Sydney place, Brooklyn, for a beautiful display of bouquets. Gardeners' Chronicle.

D. Boll, corner of Broadway and 50th-street, for a fine display of bouquets. Hovey's Magazine of Horticulture.

J. M. Thorburn & Co., Astoria, L. I., for a display of beautiful bouquets. Parsons's Rose Manual.

Miss S. A. Ogden, Newark, N. J., for several pretty bouquets. Mrs. Loudon's Flower Garden.

Mrs. C. C. Hemmenway, Williamsburg, L. I., for a beautiful bouquet of grasses. Trans. Am. Ins.

Mrs. Henderson, Middle Village, L. I., for a splendid flower basket. Silver medal.

J. C. Green, Staten Island, (Wm. Chorlton, gardener,) for a splendid flower basket. Silver medal.

Gustavus Struck, 17 Beekman-street, for a beautiful display of artificial bouquets and baskets. Parlor Book of Flowers.

Miss Mary Baker, South Dennis, Mass., for a beautiful rustic stand of wax flowers. Parlor Book of Flowers.

Archibald Henderson, Middle Village, L. I., for the best floral design. Silver cup, $10.

J. C. Green, Staten Island, (Wm. Chorlton, gardener,) for a superb floral design. Silver cup, $8.

P. Condon, Yellow Hook, L. I., for a beautiful floral design. Silver medal.

F. Lasher, Hudson, N. Y., for a beautiful pyramid of dahlias. American Flora.

Special Exhibition, Oct. 7th. 1850.

J. M. Thorburn & Co., Astoria, L. I., for 24 splendid blooms of named dahlias. Silver medal.

Henry A. Cargill, corner of 10th Avenue and 60th-street, N. Y., for 24 splendid blooms of named dahlias. Silver medal.

William Beekman, corner of 51st-street and 9th Avenue, for 24 splendid blooms of named dahlias. Silver medal.

John Jamison, for 24 beautiful blooms of named dahlias. Boudoir Botany.

G. H. Stryker, corner of 11th Avenue and 50th-street, for 24 fine blooms of named dahlias. Parsons's Rose Manual.

Mateo Donadi, Bloomingdale, N. Y., for the best 20 varieties of named roses. Silver medal.

Charles Moré, corner of 3d Avenue and 98th-street, for 20 varieties of beautiful named roses. Boudoir Botany.

J. B. Lenoir, Bloomingdale, N. Y., for 20 varieties of fine named dahlias. Downing's Landscape Gardening.

J. E. Rauch, Brooklyn, L. I., for the best American seedling dahlias. Silver medal.

Mateo Donadi, Bloomingdale, N. Y., for very fine seedling dahlias. American Flora.

Mateo Donadi, Bloomingdale, N. Y., for the best 6 American seedling roses. Silver medal.

FRUIT.

William S. Carpenter, 468 Pearl-street, N. Y., for the greatest number of choice varieties of apples. Silver cup, $8.

John W. Bailey, Plattsburg, N. Y., for a fine display of choice apples. Silver medal.

Parsons and Co., Flushing, L. I., for a good display of choice apples. 4 Nos. Hovey's Fruits.

Hovey and Co., Cambridge, Mass., for the best table apples. Downing's Fruits.

Henry W. Sargaent, Fishkill Landing, N. Y., for a sample of fine table apples. Thomas' Fruit Culturist.

Eli R. Dix, Vernon, Oneida, Co., N. Y., for a splendid display of apples. Downing's Fruits.

Wm. Marsh, York Mills, Toronto, C. W., for two varieties of seedling apples, of superior quality. Downing's Fruits.

Hovey and Co., Cambridge, Mass., for the greatest number of choice varieties of pears. Silver cup, $8.

A. P. Cumings, Williamsburgh, L. I., for a fine display of choice pears. Silver medal.

Parsons and Co., Flushing, L. I., for several varieties of choice pears. 4 Nos. Hovey's Fruits.

John Tonnelle, Bergen, N. J., for the best table pears. Hovey's Magazine of Horticulture.

William S. Carpenter, 468 Pearl-street, N. Y., for a sample of fine table pears. Thomas's Fruit Culturist.

L. S. Haskell, Belleville, N. J., for a superb display of Duchesse d'Angoulême pears. Cole's Fruit Book.

T. W. Smith, Syracuse, N. Y., for a superb display of Onondaga pears. Cole's Fruit Book.

Charles Mathews, Madison, N. J., for the best freestone peaches. Downing's Fruits.

J. M. Ward, Newark, N. J., for a sample of freestone peaches. Thomas's Fruit Culturist.

H. F. Liftchild, New-Jersey, for the best clingstone peaches. Hovey's Magazine of Horticulture.

Dexter Fairbank, 237 West-14th-street, N. Y., for a sample of fine clingstone peaches. Cole's Fruit Book.

Wm. Hughes, Mateawan Point, N. J., for the best Isabella grapes. Silver medal.

T. L. Porter, Mateawan Point, N. J., for a sample of fine Isabella grapes. 4 Nos. Hovey's Fruits.

Wm. Hughes, Mateawan Point, N. J., for the best Catawba grapes. Silver medal.

Henry W. Sargeant, Fishkill Landing, N. Y., for the best and greatest variety of native grapes. Silver medal.

Roswell L. Colt, Paterson N. J., for the best foriegn grapes. Silver medal.

Jacob B. Boerum, Flushing, L. I., for a superb display of foreign grapes. 4 Nos. Hovey's Fruits.

P. S. Van Rensselaer, Clinton Point, N. Y., for an excellent display of foreign grapes. Allen on the Vine.

William Wright, Newark, N. J., for a fine display of foreign grapes. Hoare on the Vine.

John Tonnellé, Bergen, N. J., for the best quinces. Silver medal.

E. Kimball, Flatlands, L. I., for a sample of superior quinces. Hovey's Magazine of Horticulture.

A. P. Cumings, Williamsburgh, L. I., for a sample of excellent quinces. Thomas's Fruit Culturist.

J. J. Schofield, Morristown, N. J., for a basket of extra fine apple quinces. Thomas's Fruit Culturist.

Stephen Burtis, Mechanicsville, N. Y., for superb apple quinces. Cole's Fruit Book.

T. W. Thorley, Catskill, N. Y., for a splendid basket of mixed fruit. Downing's Fruits.

A. Marks, Durham, Greene Co. N. Y., for a fine display of fruit. Trans. Am. Ins.

VEGETABLES.

H. C. Murphy, Yellow Hook, L. I., for the choicest assortment of culinary vegetables. Silver cup, $8.

E. H. Kimball, Flatlands, L. I., for the second best assortment of culinary vegetables. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best and greatest variety of vegetable roots for cattle. Silver cup, $8.

J. P. Giraud, Jr., Bergen, N. J., for the second best and greatest variety of vegetable roots for cattle. Silver medal.

J. P. Giraud, Jr., Bergen, N. J., for the best long blood beets. Bridgeman's Gardener's Assistant.

Roswell L. Colt, Paterson, N. J., for the best turnip rooted beets. Allen's American Agriculture.

James McFarlane, English Neighborhood, N. J., for the best sugar beets. N. Y. Far. & Mec.

Archibald Henderson, Middle Village, L. I., for the best mangold-wurtzel beets. Am. Agriculturist.

Archibald Henderson, Middle Village, L. I., for the best Savoy cabbage. Buist's Kitchen Gardner.

Roswell L. Colt, Paterson, N. J., for the best carrots for the table. N. Y. Far. and Mec.

Roswell L. Colt, Paterson, N. J., for the best parsnips for the table. Trans. Am. Ins.

Archibald Henderson, Middle Village, L. I., for the best parsnips for cattle. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best white solid celery. Farmer's Library.

Roswell L. Colt, Paterson, N. J., for the second best white solid celery. Buist's Kitchen Gardner.

R. K. Delafield, Staten Island N. Y., for the best egg plants Vol. of the Cultivator.

Roswell L. Colt, Paterson, N. J., for the best peck of white onions. Bridgeman's Gardener's Assistant.

Roswell L. Colt, Paterson, N. J., for the best peck of yellow onions. Farmer's Dictionary.

Roswell L. Colt, Paterson, N. J., for the best peck of red onions. Allen's Farm Book.

M. R. McGariety, West Hoboken, N. J., for the best peck of seedling potatoes. Farmer's Library.

J. P. Giraud, Jr., Bergen, N. J., for a splendid display of seedling potatoes. Farmer's Library.

S. H. Gray, Staten Island, for the best peck of potatoes for the table. Farmer's Dictionary.

Richard Vermilyea, 1 West Washington Market, for a sample of superior sweet potatoes. Trans. Am. Ins.

Archibald Henderson, Middle Village, L. I., for the best half peck of tomatoes. Farmers' Dictionary.

George Witherspoon, New Brighton, S. I., for the second best half peck of tomatoes. Buist's Kitchen Gardener.

J. P. Giraud, Jr., Bergen, N. J., for a superb display of tomatoes. Trans. Am. Ins.

John Tonnelé, Bergen, N. J., for an extra large watermelon of very fine quality. Trans. Am. Ins.

R. L. Colt, Paterson, N. J., for the best three cheese pumpkins. Farmers' Dictionary.

Peter F. Suydam, Bushwick, L. I., for 3 superior cheese pumpkins. Trans. Am. Ins.

M. C. Crane, Governor's Island, for the best and largest pumpkins. Blake's Farmer's Every Day Book.

R. L. Colt, Paterson, N. J., for the best three vegetable marrow squashes. Blake's Farmer's Every Day Book.

Samuel Halden, Bloomingdale, N. Y., for the best 3 crooked neck squashes. Amer. Agriculturist.

E. R. Codwise, Somerset Co. N. J., for the best and largest squash. Blake's Farmer's Every Day Book.

Smith Ely, New Brighton, S. I., for an extra large yellow crooked neck squash. Bridgeman's Kitchen Gardener.

James McFarlane, English Neighborhood, N. J., for three extra large Valparaiso squashes.

John Bergen, Jr., Gowanus, L. I., for two extra large Lima squashes. Farmers' Dictionary.

Wm. Chapell, Chester, Conn., for a superior Valparaiso squash. Trans. Amer. Ins.

J. P. Giraud, Jr., Bergen, N. J., for a fine display of pumpkin squashes. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best roots of salsify. Buist's Kitchen Gardener.

C. Williams, Astoria, L. I., for extra large garlic. Buist's Kitchen Gardener.

George Witherspoon, New Brighton, S. I., for a fine sample of green peas. Trans. Am. Ins.

Mrs. D. Dayton, Brooklyn, L. I., for extra fine peppers. Buist's Kitchen Gardener.

John Tonnelé, Bergen, N. J., for superior globe artichokes. Buist's Kitchen Gardener.

P. S. Rensselaer, Clinton Point, N. Y., for fine Lima beans. Bridgeman's Kitchen Gardener.

Archibald Henderson, Middle Village, L. I., for the best drum head cabbage. Buel's Farmer's Companion.

MISCELLANEOUS.

Richard Hawkins, Somerset Co., N. J., for a jar of burr pickles. Diploma.

Calvin Barker, Factoryville, S. I., for a basket of superior peanut plants. Diploma.

John S. Whitlock, Middletown Point, N. J., for a sample of very fine black monthly raspberries. Diploma.

Isaac Reckow, 142 Liberty-st., for a jar of fine brandy peaches. Diploma.

J. J. Walters, New Haven, Conn., for a superior plant syringe of American manufacture. Diploma.

John Banker, Sand Hill, N. J., for a basket of extra fine barberries. Trans. Am. Ins.

Mrs. C. E. Benson, Brooklyn, for a beautiful specimen of galvanized fruit. Diploma.

W. Simmons, East New-York, L. I., for extra large gooseberries in spirits. Diploma.

James McGuinniss, Staten Island, for the best preserved gooseberries. Diploma.

A. W. Daby, 61 Elizabeth-street, for a fine display of mustard from American seed. Diploma.

Miss Eleanor Radmond, Jamesburgh, N. J., for the best brandy peaches. Trans. Am. Ins.

Wm. Barnes, Rutland, Vt., for the best maple sugar. Farmers' Dictionary.

Eli R. Dix, Vernon, Oneida Co., N. Y., for a sample of superior maple sugar. Trans. Am. Ins.

Arza Gilmore, Wayne, Me., for the best honey in the comb. Miner's Bee Manual.

George D. Lathrop, Hallowell, Me., for a sample of fine honey. Trans. Am. Ins.

Hugh Wardle, S. I., for extra fine sauces. Diploma.

Arza Gilmore, Wayne, Me., for the best apiary or bee hive. Silver Medal.

AGRICULTURAL IMPLEMENTS.

North & Denio, Fly Creek, Otsego Co., N. Y., Townsend, Clark & Co., agents, 60 Broad-street, for the best manure and hay forks. Silver medal.

J. R. Schoonmaker, Middletown, Orange Co., J. O. Batten, agent, N. Y., for the second best manure and hay forks. Diploma.

Stephen Keys & Co., Norfolk, Conn., H. P. Pettibone, agent, 19 Platt-st., for planter's hoes. Silver medal.

Chapman Warner, Louisville, Ky., for the best churn. Diploma.

Ruggles, Nourse & Mason, Boston, Mass., A. B. Allen & Co., agents, 189 Water-st., for the second best churn. Diploma.

Ruggles, Nourse & Mason, Boston, Mass., A. B. Allen & Co., agents, 189 Water-st., for the best vegetable cutter. Diploma.

J. P. Groshen, Yonkers, N. Y., for a corn planter. Diploma.

C. H. McCormick, Chicago, Ill., for a Virginia grain reaper ; (a gold medal having been before awarded.) Diploma.

I. T. Grant & Co., Junction, N. Y., for a patent fanning mill. Silver medal.

B. D. Sanders, Hollidays Cove, Va., for a grain cleaning machine. Silver medal.

Wm. Hovey, Worcester, Mass., for a hay and straw cutter. Diploma.

Ruggles, Nourse & Mason, Boston, Mass., A. B. Allen, agent, 189 Water-st., N. Y., for a hay and straw cutter. Diploma.

Reuben Daniels, Woodstock, Vt., for self-sharpening straw cutter. Diploma.

Joseph Sweet, Lycoming Co., Pa., for a road or excavating scraper. Diploma.

Winsted Manufacturing company, Winchester, Conn., Boyd & Ripley, agents, 18 Platt st., for cradles and scythes. Diploma.

Draper, Brown & Chapsey, Troy, N. Y., Logan & Vail, agents, 13 Cliff st., for a scythe and sneath. Diploma.

H. L. Emery & Co., Albany, for the best seed sower. Diploma.

Special Premiums.

John Mayher & Co., 197 Water street, for the largest collection of agricultural implements, embracing about 300 different varieties. Gold medal.

A. B. Allen & Co., 189 Water street, for a large and choice collection of agricultural implements, embracing almost every thing new and useful. Gold medal.

TESTING OF PLOUGHS.

John Moore, 191 Front street, for the best plough, combining the greatest number of requisites to plough a furrow 16 inches wide, 8 inches deep. Silver cup, $8.

Benjamin Meyer, Newark, N. J., for the second best do. Silver medal.

John Moore, 191 Front st., for the best plough combining the greatest number of requisites to plough a furrow 12 inches wide and 6 inches deep. Silver cup, $8.

John Mayher & Co., 197 Water street, for the second best do. Silver medal.

PLOUGHING MATCH.

Thomas Conay, Greenburg, Westchester Co., for the best ploughing. Silver cup, $8.

Asa B. Munn, Orange, Essex Co.. N. J., for the second best ploughing. Silver medal.

Ira Peck, Orange, Essex Co., N. J., for the third best ploughing. Diploma.

SPADING.

Archibald Henderson, Middle Village, L. Island, for the best spading. Silver cup, $8.

Edward Griffiths, for the second best spading. Silver Medal.

Joseph Mulley, for the third best spading. Diploma.

Edward Peacock, for spading. Trans. Am. Ins.

MANUFACTURING AND MECHANICAL DEPARTMENT.

ARCHITECTURAL AND MECHANICAL DRAWING.

F. A. Peterson, 363 Broadway, N. Y., for the best specimen of architectural drawing. Diploma.

J. Robertson, Brooklyn, L. I., for the best specimen of mechanical drawing. Diploma.

P. R. Milgarten, Lowell, Mass., for machine drawing. Diploma.

BATHS.

John Locke, 47 Ann street, N. Y., for shower baths, with douches, &c. Diploma.

Barclay & Dennison, 109 9th Avenue, for superior shower bath fixtures. Diploma.

Albert & Mack, 92 Catharine-street, for a bath tub, with heater attached, combining economy and utility. Diploma.

Smith, Torrey & Co., 50 Maiden Lane, for a zinc hip bath. Diploma.

BELLS.

Andrew Meneely, Troy, N. Y., George H. Swords, agent, 116 Broadway, N. Y., for a peal of 9 bells. Gold medal.

Edward A. Tudor, Brooklyn, L. I., for a bell. Diploma.

BOATS.

Iron.

Mott & Ayres, Chelsea Iron Works, 26th-street and North River, N. Y., for superior iron boats. Gold medal.

Wood.

George W. James, Brooklyn, L. I., for the best boat "Jenny Lind." Silver medal.

George C. Newman, 246 Front street, for an excellent boat "Independence." Diploma.

BOOK-BINDING.

Kotch & Co., 160 William-street, N. Y., for the best specimen of book-binding. (Silver medal having been before awarded.) Diploma.

Baker & Duyckinck, 158 Pearl-street, for the best ordinary blank books. Silver medal.

John P. Burnton, 1 Platt-street, for specimens of blank binding. Silver medal.

Charles Starr, 115 Nassau-street, for a machine for stamping backs of books. Gold medal.

R. C. Root & Anthony, 7 Nassau-street, for blank account books. Diploma.

Minors' Work.

Thomas J. Hogan, 41 Fulton-street, for a specimen of book-binding. $5 and a certificate.

GENTS' BOOTS AND SHOES.

George R. Townsley, Springfield, Mass., for the best patent leather and double soled boots. Silver medal.

Young & Server, 520 Broadway, Albany, N. Y., for excellent patent leather boots. Diploma.

George Hammann, 418 Broadway, for excellent double soled boots. Diploma.

John L. Watkins, 114 Fulton street, for the best California boots. Diploma.

George Darling, Woonsocket, R. I., Stout & Ward agents, 249 Pearl-street, for excellent California boots. Diploma.

Peter Dorn, Philadelphia, for patent overshoes. Silver medal.

J. T. Kinken & Co., 207 Cherry-street, for hair insoles. Diploma.

John R. Pitkin & others, 68 Broadway, for pegged shoes manufactured by combination of labor and machinery. Silver medal.

LADIES' BOOTS AND SHOES.

Benjamin Shaw, 73 Canal-street, for the best ladies' boots and shoes. Silver medal.

Young & Server, 520 Broadway, Albany, for excellent specimens of ladies boots and shoes. Diploma.

BRIDGES.

Lownan Gay, Rochester, N. Y., for an iron bridge. Diploma.

Wm. H. Allen, Brooklyn, N.Y., for a self-supporting arch truss bridge. Diploma.

Jacob S. Lansing, Canistota, N. Y., for a wooden bridge. Diploma.

BRITTANNIA AND ALBATTA WARE, &c.

John H. Whitlock, Troy, Rensselaer Co., N. Y., for the best cast and turned Brittannia ware. Silver medal.

Endicott & Sumner, 106 Elm-street, for excellent Brittannia ware. Diploma.

Allcock & Allen, 341 Broadway, for elegant tea sets, &c., plated on Albatta ware. Gold medal.

Filley & Mead, Philadelphia, for nickel silver ware. Silver medal.

BRUSHES.

Porter & Fairchild, 289 Hudson-street, for superior brushes. Silver medal.

Steele & Co., 305 Pearl-street, and 53 Nassau-street, for the best specimen of feather brushes. Silver medal.

Combs, Lewis & Co., 115 6th Avenue, for feather brushes. Diploma.

CABINET WARE.

Mc Donough & Hammett, Philadelphia, for the best sofa bedstead. Silver medal.

W. B. & H. W. Douglass, Newark N. J., for gothic rosewood inlaid table. Diploma.

George J. Colsey, 90 Leonard-street, for the best portable desk. Silver medal.

G. W. Whitmore, Brooklyn.

R. H. & I. G. Isham, 71 Fulton-street, for superior sand paper. Diploma to each.

Ingersoll & Halsey, 71 Bowery, for the best fancy chairs. Diploma.

Charles Gumbert, 79 Grand-street, for an easy chair, excellent specimen of upholstery. Diploma.

David Walker, Newark, N. J., for self-rocking cradles. Diploma.

A. F. Schade, 60 Greenwich-street, for book-racks. Diploma.

Mason & Smith, 28 and 30 Attorney-street, for rosewood chairs. Diploma.

Mc Donough & Hammett, Philadelphia, for a writing desk. Diploma.

J. H. Frazer, 312 Pearl-street, for a mahogany show case. Diploma.

N. P. Kimball, 47 Beekman-street, for kiln-dried pine doors. ilver medal.

John S. Meyer, 27th-street, for machine made doors. Diploma.

Minors' Work.

Wm. H. Hooper, 51 Greenwich-street, for a ladies' work-box $5 and a Certificate.

CAKES, BISCUIT, CONFECTIONERY, &C.

Nathan Raynor, 400 Grand-street, for the best plum cake. Diploma.

Benjamin Witt, 324 Grand-street, for excellent plum cake. Diploma.

C. Hitzelberger, corner of 18th-street and 8th Avenue, for the best ice cream. Diploma.

Warren Thayer, 29th-street, for very superior Boston crackers. Diploma.

Johnston & Treadwell, 116 Beekman-street, for very superior soda biscuit. Diploma.

J. H. Schoonmaker & Co., 219 Fulton-street, for very superior fancy biscuit. Diploma.

Mrs. R. Y. Lawrence, 11½ Third Avenue, for superior fancy cakes. Diploma.

J. Govaerts, 376 Pearl-street, for very superior chocolate. Diploma.

F. Walter, 116 Orange-street, Brooklyn, for the best ornamental confectionery. Diploma.

A. Seitz, 137 Reade-street, for excellent ornamental confectionery. Diploma.

James A. Quinn, 243, Bleeker-street, for excellent confectionery. Diploma.

CARPETING AND OIL CLOTHS.

Bigelow Carpet Co., Clinton, Mass., H. P. Fairbanks, Boston, for the best Brussels carpet. Gold medal.

A. S. Higgins & Co., 62 Broad-street, for the best Brussels and velvet tapestry carpets. Gold medal.

A. & E. S. Higgins & Co., 62 Broad-street, for the best 3 ply carpet. Silver medal.

A. & E. S. Higgins & Co., 62 Broad-street, for the best rug. Silver medal.

M. Davis & Co., 84 William-street, for the best table oil cloth. Silver medal.

CARRIAGES, SLEIGHS, AND AXLES.

C. Beardsley, 32 Canal-street, for the best top wagon. Silver medal.

James Flynn, 3d Avenue and 49th-street, for an excellent top wagon. Diploma.

James Flynn, 3d Avenue and 49th-street, for the best wagon without top. Silver medal.

James B. Oliver, Brooklyn, for an excellent wagon without top. Diploma.

J. C. Thornton, Columbia, S. C., for a buggy wagon. Silver medal.

J. G. Ostram, Rhinebeck, Wood & Tomlinson, agents, 410 Broadway, for a superior sleigh. Silver medal.

Benjamin Benson, Smyrna, Delaware, for a tilting or dumping wagon. Silver medal.

Joseph Hyde, Troy, N. Y., for an improved hollow iron wagon. Silver medal.

James Patterson, Cattaraugus Co., N. Y., for an iron wagon. Silver medal.

William Sayre, Newark, N. J., for the best child's carriage. Silver medal.

J. K. Taylor, Bridgeport, Conn., for the best patent axle. Silver medal.

E. S. Scripture, Greenpoint, L. I., for a superior patent axle and coupling. Silver medal.

A. E. Smith, 93 Maiden Lane, for the best mode of connecting hubs to axles. (Silver medal having been before awarded.) Diploma.

Patterson & Horseman, Newark, N. J., for a superior set of carriage springs. Diploma.

E. T. Sprout, Hughesville, Penn., for 4 wheeled carriage springs. Diploma.

Ambrose Tower, Greenpoint, L. I., for Scripture's patent carriage wheels. Diploma.

Downs & Whitlock, Birmingham, Conn., for good specimens of stump joints. Diploma.

John L. Allen, New Haven, Conn., for an improvement in elevating and lowering carriage tops. Silver medal.

Goff & Day, Brooklyn, for a Chinese tea cart. Diploma.

CARVING AND GILDING.

Henry Gritten, 376 Broadway, for the best carved and gilded frame. Silver medal.

Henry Stidolph, 331 6th Avenue, for a fine specimen of imitation fire gilding. Diploma.

CASTINGS.

Leroux & Villot, 83 Duane-street, for the best castings. Silver medal.

J. Moore, 3 Dutch-street, for excellent castings. Diploma.

CLOCKS AND WATCHES.

Charles E. Jacot, 119 Fulton-street, for an improved duplex escapement. Gold medal.

Frederick Kiddle, 88 Fulton-street, for an improved eight-day watch. Silver medal.

A. D. Crane, Newark, N. J., for an astronomical year clock. Silver medal.

S. B. Jerome, New Haven, for an eight-day clock. Diploma.

Frederick Kiddle, for the workmanship on duplex escapement clock. Silver medal.

CLOTHING.

Croney & Lent, 720 Broadway, for the best specimen of men's clothing. Silver medal.

Booth & Foster, 27 Courtlandt-street, for excellent specimens of men's clothing. Diploma.

Ellis & Iselton, 439 Broadway, for the best specimen of children's clothing. Silver Medal.

E. J. Olssen, 74 Bowery, for excellent specimens of children's clothing. Diploma.

Waterbury Button Co., Waterbury, Conn., D. M. Knight & Co., agents, 53 Cedar-street, for the best specimens of gilt buttons. Silver medal.

Abbott & Wardwell, Manufacturing Co., Waterbury, Conn., J. Chamberlain, 59 Liberty-street, agent, for excellent specimens of gilt buttons. Diploma.

A. & G. A. Arnoux, 303 Broadway, for waistcoats of superior workmanship and fit. Diploma.

John T. Goldsmith, 76 Nassau-street, for a seamless patelot. Diploma.

COMBS AND MOROCCO GOODS.

Bates & Jordan, Boston, Mass., Thomas A. Gray, agent, for the best shell combs. Silver medal.

W. Pauly, 85 Leonard-street, for excellent shell combs. Dip.

A. & J. Saunders, 147 Broadway, for razor strops. Diploma.

John Fenn, 45 Ann-street, for ivory tablets and fine combs. Diploma.

COOPERS' WORK.

L. A. Humiston, Cheshire, Conn., for kegs and firkins. Dip.

James H. Costar, 67 Franklin-street, for cedar pail. Diploma.

E. Hopkins, 153 Third-street, for a neat butter keg. Diploma.

Minor's Work.

Thomas Murray, 32 Old Slip, for the best barrel. $5 and a certificate.

A. C. Coquillett, 130 Broad-street, for an excellent barrel. $3 and a certificate.

John Van Cott, 214½ Broome-street, for a keg considered creditable for his skill and ingenuity. $3 and a certificate.

Edward C. Hagerty, 130 Broad-street, for a keg. Diploma.

COTTON.

J. V. Jones, Alabama, Ga., for a bale of superior silk cotton. Dip.

COTTON GOODS.

B. S. Walcott, New-York Mills, Charles Carville, agent, 17 Broad-street, for the best bleached shirtings. Gold medal.

Wamsutta Mills, New Bedford, Mass., Willard & Wood, agents, 40 and 42 Broad-street, for bleached cotton goods. Silver medal.

Pocasset Co., Fall River, Mass., McCurdy, Aldrich & Spencer, agents, 30 Broad-street, for the best heavy sheetings. Diploma.

Williamsville Manufacturing Co., R. I., Nesmith & Co., agents, for the best brown shirtings. Silver medal.

Lonsdale & Co., Providence, R. I., Lawrence, Trimble & Co., agents, 35 Broad-street, for the best twilled silesias and black umbrella cloth. Silver medal.

Hope Co., Providence, R. I., Lawrence, Trimble & Co., agents, 35 Broad-street, for the best plain silesias. Silver medal.

Glasgow Manufacturing Co., South Hadley Falls, Mass., Atwater, Knapp & Woodruff, agents, 43 and 45 Broad-street, for the best ginghams and galla plaid lindseys. Silver medal.

J. D. McEwing, 157 West 15th-street, for buckrams, crown lindseys and book muslins. Diploma.

A. W. Sprague, Providence, R. I., Hoyt & Tillinghast, agents, 11 Broadway, for the best madder prints. Gold medal.

Marqueston & Co., Haverstraw, N. Y., Garner & Co., agents, 33 Pine-street, for damask and furniture chintz prints. Gold medal.

American Print Works, Fall River, Mass., McCurdy, Aldrich & Spencer, agents, 30 Broad-street, for printed calicoes. Diploma.

B. Marshall, Troy, N. Y., Charles Carville, agent, 17 Broad-st., for chambrays, beautiful colors and superior fabric. Silver med.

B. S. Walcott, New-York Mills, Stanton, Barnes & Hamilton, agents, for cottonades. Diploma.

R. Garsed & Brothers, Frankfort, Penn., Beals, Bush & Co., agents, for bed tick. Silver medal.

Brownley & Sniffen, 18 Pine-street, for the best black wadding. Diploma.

George Blackburn & Co., Boston, Mass., W. C. Langley & Co., agents, 25 Broad-street, for the best cotton duck. Silver medal.

James Maull, Philadelphia, for excellent cotton duck. Diploma.

H. H. Stephens, Webster, Mass., Dale & Wright, agents, 24 Broad-street, for linen diaper and crash. Gold medal.

Sagamore Co., Portsmouth, N. H., for superior 6 cord spool cotton. Gold medal.

Thomas H. Fisher, Lansingburgh, N. Y., Nesmith & Co., agents, for patent linen thread. Gold medal.

A Wortendyke, Newtown, near Paterson, N. J., for superior chandlers' wick. Diploma.

H. Guerrier, 18 Dey-street, for dyeing, bleaching, and restoring Canton crape shawls from a damaged state. Diploma.

CUTLERY.

Waterville Manufacturing Co., Waterbury, Conn., F. G. Wheeler, 7 Gold-street, agent, for the best pen and pocket cutlery. Gold medal.

John Wild, Jr., 160 Division-street, for excellent pen and pocket cutlery. Silver Medal.

Lamson, Goodnow & Co., Shelburne Falls, Massachusetts, warehouse 7 Gold-street, for the best table cutlery. Gold medal.

Pratt, Ropes, Webb & Co., West Meriden, Connecticut, A. R. Moen, agent, 128 Water-street, for excellent table cutlery. Silver medal.

Franklin Reed, Mass., for superior shoe knives. Diploma.

John Rowe, 6 Platt-street, for tailors' shears. Diploma.

John Garside, Newark, N. J., for superior handles on table cutlery. Silver medal.

DAGUERREOTYPES.

M. A. & S. Root, 363 Broadway, for the best daguerreotypes. Silver medal.

J. Gurney, 189 Broadway,

Meade Brothers, 233 Broadway,

Harrison & Holmes, 289 Broadway,

D. E. Gavit, 247 Broadway,

C. M. Cary, 187 Broadway,

For excellent daguerreotypes, no difference being perceptible to the Judges. Silver medal to each.

Meade Brothers, 233 Broadway, for superior chemically colored daguerreotypes. Diploma.

Minors' Work.

Thomas B. Atkins, 219 Fulton-street, Brooklyn, for daguerreotypes. $5 and a certificate.

DIES AND CHASING.

William M. Tompson, 169 William-street, for the best specimen of gilding stamps. Silver medal.

John Feely, 15 North William-street, for bookbinders' ornaments. Diploma.

L. T. Boland, 7 Dey-street, for the best ornamented crests. Silver medal.

James W. Smith, 102 Reade-street, for excellent ornamented crests. Diploma.

DENTAL INSTRUMENTS.

John D. Chevalier, 184 Broadway, for the best dentist's lathe. Silver medal.

R. G. Holmes, 261 Washington-street, Brooklyn, for a dentist's grinding, polishing and drilling apparatus. Diploma.

John D. Chevalier, 184 Broadway, for the best dental instruments. Diploma.

DENTISTRY.

Blanding & Avery, Columbia, S. C., for the best workmanship, both in design and finish, of mounting teeth on gold plate. Gold medal.

Edmund Barlow, 471 Hudson-street, for specimens of artificial teeth on gold plate. Diploma.

DRUGS AND CHEMICALS.

Charles Ellis & Co., Philadelphia, Pa., for an extensive exhibition of chemical preparations. Silver medal.

Kuh & Kreischer, Brooklyn Chemical Works, for a variety of acids and other chemicals, used in dyeing and printing. Silver medal.

Tilden & Co., New-York, for pure medicinal extracts. (Silver medal having been before awarded.) Diploma.

Haskell & Merrick, 10 Gold-street, for pure powdered medicinal drugs. Diploma.

R. H. & J. G. Isham, 103 Front-street, for a specimen of grinding drugs. Diploma.

Lord, Lynch & Co., 141 Sullivan-street, for the best family compound washing soap, "Crane's patent." Silver medal.

H. L. Kendall & Co., Providence, R. I., for excellent family soap. Diploma.

Job W. Greene, 11½ Broadway, for chemical washing soap. Diploma.

J. T. Johnson, corner of 8th Avenue and 52d-street, for chemical erasive soap. Diploma.

B. T. Babbitt, 68 and 70 Washington-street, for soap powder. Diploma.

J. S. Fraser & Co., Boston, Massachusetts,

James Pyle, 150 Nassau-street, for the best washing fluid. Diploma to each.

Sylvester & Stover, 64 and 66 Barclay-street, for excellent washing fluid. Diploma.

William Blake, 84 Pearl-street,

Campbell & Andrews, Ohio, for the best specimen of mineral or fire proof paint. Silver medal to each.

New Jersey Exploring and Mining Company, S. T. Jones & Co., agents, 53 Beaver-street, for zinc paint. Gold medal.

Theodore Schwartz, 14 Jacob-street, for Paris green. (Gold medal having been before awarded.) Diploma.

Daniel Smith & Son, 179 Greenwich-street, for ravens black. Silver medal.

Isaac Gattman & Co., Rochester, New-York, F. Leonard, agent, 128 Fulton-street, for an assortment of colors. Diploma.

Quarterman & Son, 114 John-street, for a dryer for paint, gold size, and stove polish. Diploma.

Goddard & Co., 11 Chambers-street, for hair gloss. Diploma.

T. Roettger, 45 Allen-street, for bleached shellac and sponge. Silver medal

John Dwight & Co., New-York City, for soda ash. Silver medal.

B. T. Babbitt, 68 and 70 Washington-street, for double refined saleratus. Silver medal.

George Jeffries, 145 Maiden Lane, for refined brimstone. (Silver medal having been before awarded.) Diploma.

E. G. Barker, 43d-street, west of 10th Avenue, for the best friction matches without sulphur. Diploma.

Charles Partridge, 3 Courtlandt-street, for excellent friction matches without sulphur, and segar lights. Diploma.

W. J. Wilcox, Cheshire, Conn., for water proof matches. Dip.

George H. Bates, Cincinnati, Ohio, for the best sample of prussiate of potash. Silver medal.

John Vandeventer, 227 Washington-street, for the best shoe blacking. Diploma.

W. Currey, 50 Chestnut-street, Philadelphia, for excellent shoe blacking. Diploma.

George R. Townsley, Springfield, Mass., for water proof black ing. Diploma.

W. Currey, Philadelphia, Pa., for the best liquid blacking. Dip.

C. Paveys, 494 Hudson-street, for composition for preserving and cleaning harness. Diploma.

W. Burgher & Co., 34 Courtlandt-street, for refined saltpeter. Silver medal.

Emanuel Lyon, 420 Broadway, for magnetic powder and pills, without poison, for destroying insects. Silver medal.

A. Nix, Macomb's Dam, N. Y., for a fine specimen of bleached wax, and wax tapers. Silver medal.

H. A. Cammus, 307 Bowery, for aromatic cachous. Diploma.

Delluc & Co., 581 Broadway, for superior flavoring extracts. Diploma.

Aromatic Soda Co., 87 Nassau-street, for aromatic soda and seidlitz powders. Diploma.

Robinson, Wiggin & Co., Boston, H. Butler, agent, 93 Wall-street, for the best candles. Silver medal.

Pierson & Robertson, Newark, N. J., for the best varnish. Silver medal.

Isaac W. Sitler, for varnish for covering iron, &c. Diploma.

Thos. J. Husband, Philadelphia, Pa., for the best calcined magnesia. Silver medal.

Joseph E. Hover, Philadelphia, Pa., George F. Nesbitt, agent, corner Wall and Water-streets, for the best writing ink. (Silver medal having been before awarded.) Diploma.

E. Waters, Troy, N. Y., for tooth soap, black and red writing ink, &c. Diploma.

Gibbs & Meeser, Lancaster, Penn., Steele & Co., agents, 53 Nassau-street, for neutral inks. Diploma.

Scofield & Hatton, 168 Division-street, for the best indelible marking ink. Diploma.

Thomas Manson, 20, 8th Avenue, for Jenny Lind tooth paste. Diploma.

Kingsford & Son, 196 Fulton-street, for the best specimen of pure starch. Silver medal.

Francis Ramppen, Brooklyn, for a specimen of pure starch. Diploma.

William Ross, 79 Nassau-street, for detergent for cleaning daguerreotype plates. Diploma.

J. S. Scofield, 108 Division-street, for crystalized cream and orris tooth paste. Diploma.

Keen & Co., 79 Canal-street, for the best furniture polish. Dip.

Shirley & Co., Boston, Mass., for excellent furniture polish. Diploma.

John Clancey, 103 Water-street, for the best mustard. Diploma.

J. W. Kelley, 34 Beekman-street, for lemon sugar. Diploma.

Joseph Dixon & Co., Jersey City, for black lead crucibles. (Gold medal having been before awarded.) Diploma.

Reynolds & Brother, 85 Liberty-st., for safety fuse. Diploma.

E. Waters, Troy, N. Y., for the best hair dye. Diploma.

Youmans & Birdsall, 82 Nassau-street, for chart of agricultural chemistry. Diploma.

Russell & Styles, 135 Water-street, for a good specimen of extract of logwood. Diploma.

Finn & Pfaff, 73 Avenue A., for vermicelli. Silver medal.

Joseph Lombard, 350 Sixth-street, for maccaroni. Silver medal.

EDGE TOOLS &C.

W. Stephens & Son, Belleville, N. J., G. De Witt, agent, 109 John-street, for paper maker's wire. (Gold medal having been before awarded.) Diploma.

D. Simmons & Co., 7 Gold-street, for elegant specimens of axes, hatchets, &c. Gold medal.

T. H. Witherby, Milbury, Mass., Clark & Wilson, agents, 13 Cliff-street, for splendid chisels and drawing knives. Silver medal.

Roys & Wilcox, Berlin, Conn., Logan, Vail & Co., agents, 25 Cliff-street, for improved tinmen's tools. Silver medal.

Samuel Bowles, E. Smithfield, Chenango Co., N. Y., for edge tools. Diploma.

David Maydole, Norwich, N. Y., Blevins & Mead, 9 Platt-street, agents, for cast steel hammers. Diploma.

Providence Iron Co., Providence, R. I., for spike nails. (Silver medal having been before awarded.) Diploma.

N. E. Screw Co., Providence, R. I., for gimlet screws. Diploma.

A Van Gelder, 19 Platt-street, for screw hooks and eyes. Dip.

John W. Price, 189 Lewis-street, for hammered spikes. Dip.

J. W. Farr & Co., 339 Fifth-street, for superior planes. Silver medal.

John. B. Wickersham, 61 Lewis-street, for wire railing. Silver medal.

Willis Churchill, Hamden, Conn., Long & Davenport, agents, 16 Platt-street, for beautifully finished augers. Silver medal.

Cyrus Hanford, 256 Cherry-street, for edge tools. Diploma.

Bernard Hughes, Rochester, N. Y., for an improvement in pump augers. Diploma.

Ruggles, Nourse & Mason, Boston, Massachusetts, Clark and Wilson, agents, 13 Cliff-street, for superior wrenches. Diploma.

Francis Woodbridge, Manchester, Connecticut, for weather strips for doors. Diploma.

Thomas J. Wood, 62 Chatham-street, for gages, bevels, vices, and braces. Diploma.

Minors' Work.

John Brennan, 14 Franklin-street, for a brass shampooing sprinkler. $3 and a certificate.

ENGRAVINGS, ETC.

John Andrews, Rahway, N. J., for the best wood engraving. Silver medal.

N. Orr, 151 Fulton-street, for excellent wood engraving. Diploma.

Francis D'Avignon, 323 Broadway, for the best lithographic engravings. Silver medal.

N Saroni, 117 Fulton-street, for excellent lithographic engravings. Diploma.

Major & Korff, 93 William-street, for a line stone engraving. Diploma.

P. S. Duval, Philadelphia, Pa., for superior printing in colors. Silver medal.

O. B. Bidwell, 120 Nassau-street, for a map of China. Diploma.

Hamilton & Co., for superior card printing. Diploma.

Minors' Work.

William H. Van Ingen, 69 Nassau-street, for wood engraving. $5 and a certificate.

James Landgredge, 11 Bethune-street, for wood engravings. $5 and a certificate.

FINE ARTS.

Langenheim & Co., 247 Broadway, for the best Talbotypes. Silver medal.

Bertha Wehnert Von Beekmann & Brothers, 62 White-street, for excellent photographic portraits. Diploma.

Frederick Casali, 65 Franklin-street, for the best cameos. Silver medal.

Philbert Borrel, 233 Broadway, for excellent cameos. Diploma.

Sence & Flagella, 813 Broadway, for a beautiful marble mantle and pierre carton ornaments. Gold medal.

J. W. Dufrene, Philadelphia, Pa., for composition marble mantels. Gold medal.

Louis Bail, 421 6th Avenue, for drawing and modelling in plaster. Silver medal.

A. P. Moriarty, 18th-street, for the painting on Alert Hose Company, No. 41. Diploma.

Mrs. Jane E. Hart, 251 Broadway, for colored engravings. Diploma.

F. Philip, 1 Bridge-street, for the best crayon drawing. Diploma.

William Morgan, 105 Bleecker-street, for a crayon drawing. Diploma.

Miss F. A. Wilcox, Albany, New-York, for an oil painting. Diploma.

William John Burton, Flatbush, L. I., for a painting, "the Rocky Glen." Diploma.

J. H. Capel, 51 Water-street, Brooklyn, for a drawing, "Disordered table." Silver medal.

G. B. Bouton, 73 Avenue A, for a statue in wood. Silver medal.

H. Brunswick, 145 Hester-street, for figures in wax. Silver medal.

Minors' Work.

Charles Owen, 203 Henry-street, for the best crayon drawings. $5 and a certificate.

E. F. Gant, 138 East Broadway, for an excellent crayon drawing. $5 and a certificate.

Waldo Abbott, 43 Lafayette Place, for paintings. $5 and a certificate.

FIRE ARMS.

Samuel Colt, 204 Broadway, for the best revolving pistols. Gold medal.

Massachusetts Arms Company, Chicopee Falls, Mass., William

H. Smith & Co., agents, 4 Maiden Lane, for excellent revolving pistols. Silver medal.

S. B. Amory, Goshen, New-York, Wolfe & Gillespie, agents, 193 Pearl-street, for the best rifle. Gold medal.

D. Fish, 354 Pearl-street, for an excellent rifle. Silver medal.

Crittenden & Tibbetts, Coventry, Connecticut, R. D. Solace, agent, 19 Courtland-street, for percussion caps. Silver medal.

Isaac Hall, 19 Front-street, for cannon carriages. Diploma.

FIRE WORKS.

J. W. Hadfield, Williamsburg, L. I., for the best display of fire works. $50.

J. G. & I. Edge, Jersey City, N. J., for an excellent display of fire works. $30.

Henry Eyre, Jersey City, for a display of fire works. $20.

FISHING TACKLE.

J. & J. C. Conroy, 52 Fulton-street, for the best fishing tackle, rods, reels, etc. Silver medal.

Thomas Finegan, 26 Madison-street, for the best artificial flies. Silver medal.

GLASS, CHINA AND TERRA COTTA WARE.

Brooklyn Flint Glass Company, 30 South William-street, New York, for the best specimens of cut, plain and colored glass. Gold medal.

Berger and Walter, 92 John-street, for excellent specimens of cut, plain and colored glass, Silver medal.

William Oppitz, 136 Nassau-street, for the best specimen of engraving on glass. Gold medal.

Woram & Haughwout, 561 Broadway, for painting on china. Gold medal.

Albany Glass Manufactory, Albany, for glass water pipes. Diploma.

New England Glass Co., for a glass vase. Diploma.

Alexander Young, 41st-street, between Second and Third Avenue, for terra cotta ware. Gold medal.

WINDOW GLASS.

Clyde Glass Works, Kennedy & Hill, 211 Greenwich-street, for window glass of superior surface, color, and uncommon thickness. Silver medal.

GOLD PENS.

Spencer, Rendell & Dixon, 2 Maiden Lane, for superior gold pens. Gold medal.

GUTTA PERCHA.

Hudson Manufacturing Co., 181 Broadway, T. T. Armstrong, agent, for gutta percha pipe. Gold medal.

HATS, CAPS, AND MANUFACTURED FURS.

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

James Hanford, 140 Grand-street, Williamsburgh, L. I., for an excellent moleskin hat. Diploma.

C. Knox, 128 Fulton-street, for the best children's fancy hats. Silver medal.

John N. Genin, for excellent children's fancy hats. Diploma.

John N. Genin, for the best fancy furs and sleigh robes. Gold medal.

Francis Landry, 667 Broadway, for excellent fancy furs and sleigh robes. Silver medal.

William Mosher, 43 Maiden Lane, for fancy furs and sleigh robes. Diploma.

Miss Leggett, Saratoga Co., N. Y., for the best down muff and tippet. Silver medal.

STRAW HATS, ETC.

R. H. Richardson, Mass., for the best bonnet. Silver medal.

Mrs. H. D. Hills, Franklin Mass., for an excellent straw bonnet. Diploma.

C. Richardson, Mass., for the best straw braid. Diploma.

David Thayer, Franklin, Mass., for the best exhibition of bonnets. Diploma.

James Millward, 31st-street, near the 8th Avenue, for the invention and continued improvement of the pamela bonnet. Diploma.

HEMP AND FLAX.

John J. Hunter, Lexington, Kentucky, Mc Gregor & Morris, agents, 10 Broadway, for American dressed hemp. Silver medal.

Newbold & Cruft, Louisville, Ky., for an excellent specimen of hemp. Diploma.

John Galbraith, Wisconsin, A. Woodhull agent, 87 South-street, for superior flax (samples of 96 acres.) Gold medal.

Averill & Co., 47 South-street, for a sample of American undressed hemp. Diploma.

IMITATIONS OF WOOD AND MARBLE.

Henry Smith, Paterson, N. J., for the best imitation of wood. Silver medal.

H. Goulet, 66 John-street, for the best imitation of marble. Silver medal.

James Stackpole, 44 West 14th-street, for specimens of transferring on wood. Diploma.

INDIA RUBBER GOODS.

Union India Rubber Co., 19 Nassau-street, for the best display of India rubber goods. Gold medal.

Hayward Rubber Co., Colchester, Conn., Lovitt & Southwick agents, 259 Pearl-street, for the best India rubber shoes, (considered a remarkable improvement on former years.) Silver medal.

W. Ward, 159 Broadway, for the best display of India rubber toys, and fancy articles Diploma.

Edward F. Woodward, 150 Broadway, for India rubber fancy elastics and comforters. Diploma.

D. Hodgman, 27 Maiden Lane, for an India rubber air bed. Diploma.

Wm. Haigh, N. Y., for a life preserving dress. Silver medal.

IVORY TURNING.

F. Grote, 78 Fulton--street, for the best ivory turning and carving. Silver medal.

F. G. Ford, 90 Fulton-street, for excellent ivory turning and carving. Diploma.

LAMPS AND CHANDELIERS.

Allcock & Allen, 341 Broadway, for the best lamps, chandeliers and girandoles. Gold medal.

Archer & Warner, Philadelphia, for excellent lamps, chandeliers, and girandoles. Silver medal.

Archer & Warner, Philadelphia, for design and workmanship of chandelier. Gold medal.

C. Molineux, 132 William-street, for Brittannia metal lamps. Diploma.

Endicott & Sumner, 106 Elm-street, for Brittannia lamps. Diploma.

LEATHER.

W. G. Broadwell, Newark, N. J., for superior sheep and lamb skins. Silver medal.

James Cauthers, 266 Second-street, for superior American bark tanned sheep skins. Diploma.

J. F. Walker, Philadelphia, Pa., for piano leather. Diploma.

Adam Smith & Son, 50 Ferry-street, for turkey colored morocco, for bookbinders, of superior workmanship. Silver medal.

J. K. Gamble & Brother, Phila., for superior morocco. Silver medal.

John H. Bowie & Co., 30 Ferry-street, for best leather hose and fire buckets. (Gold medal having been before awarded.) Dip.

Minors' Work.

James Britton, 266 Second-street, for black harness leather. $10 and a certificate.

BANK LOCKS.

Lewis Jennings, 45 Gold-street, for the best bank lock. Gold medal.

Lewis Lillie, Troy, N. Y., for an excellent bank lock. Silver medal.

T. P. Murphy, 47 Ann-street, for the best workmanship on bank lock. Silver medal.

LOCKS, DOOR SPRINGS AND HINGES.

Lewis Jennings, 45 Gold-street, for out-side door locks, store door locks, night latches, and pad and trunk locks. Gold medal.

N. E. Butt Co., Providence, R. I., N. P. Pettibone agent, 19 Platt-street, for the best cast butt hinges. Silver medal.

A. L. Johnson, Baltimore, Md., for a patent revolving shutter. Silver medal.

Wm. McGuire, Cincinnati, Ohio, for an improved sash lock or fastener. Silver medal.

S. B. Snedaker, Cincinnati, Ohio, for a blind hinge or fastener. Silver Medal.

J. A. Pease, for a sash supporter. Silver medal.

C. Cartlidge & Co., Greenpoint, L. I., for porcelain door knobs. Gold medal.

Argillo Works, Albany, for argillo door and furniture knobs. Gold medal.

Norton, Isbel & Co., Norwalk, Conn., for mineral door knobs, &c. Silver medal.

Baldwin & Many, 52 John-street, for the best mounting of porcelian door knobs. Silver medal.

George H. Swords, 116 Broadway, for excellent mounting of door knobs. (Silver medal having been before awarded.) Dip.

J. Walkins, 9 Platt-street, for a lock with knob. Diploma.

G. W. Jackson, 56 Myrtle-avenue, Brooklyn, for the best plated knobs. Diploma.

Edward M. Curtis, 81 Pearl-street, for patent door knobs. Dip.

George F. J. Colburn, for a patent lock protector. Diploma.

A. D. Baldwin, 27 Morton-street, for shutter bars. Diploma.

John W. Day, 16 Concord-street, Brooklyn, for a house lock and latch bolt. Diploma.

D. McMillan, 19 Platt-street, for a gate spring and hinge. Dip.

J. A. Hopper, 140 Elm-street, for a sliding door lock. Diploma.

Reed & Howe, Boston, for a plan for opening and closing window shutters. Diploma.

S. C. Goffin, Morristown, N. J., for a door lock. Diploma.

N. G. Dubois, 16 Concord-street, Brooklyn, for latches and door knobs. Diploma.

William E. Arnold, Rochester, N. Y., for a sash lock or stopper. Diploma.

D. Brallman, 517 Greenwich-street, for a secret padlock. Dip.

Benjamin H. Green, Princeton, N. J., for a traveller's security. Diploma.

MACHINERY, MODELS, AND NEW INVENTIONS.

Robert Kittle, Dansville, Livingston Co., N. Y., for the best combined revolving and stationary cutter wood planing machine. Gold medal.

N. G. Norcross, Lowell, Mass., for the best revolving cutter planing machine. Gold medal.

Samuel B. Schenck, Mansfield, Mass., for an excellent revolving cutter wood planing machine. Silver medal.

John H. Lester, 192 Fulton-street, for an excellent revolving cutter wood planing machine. Silver medal.

E. G. Allen, Boston, Mass., for the best wood planing machine with stationary cutters. Gold medal.

Joseph P. Woodbury, Boston, Mass., for the best wood planing, tongueing, and grooving machine, with stationary cutters. Gold medal.

Perry G. Gardiner, 10 Wall-street, for the best horse power machine. Gold medal.

George Vail & Co., Morristown, N. J., for an excellent horse power machine. Diploma.

B. Kreischer, 62 Goerck-street, for the best fire brick. Silver medal.

Alfred Hall, Perth Amboy, N. J., for excellent fire brick. Dip.

Perry G. Gardiner, 10 Wall-street, for the best R. R. car wheel, combination of cast and wrought iron. Gold medal.

C. Hart, Bridgeport, Conn., for an excellent R. R. car wheel. Diploma.

Hart H. Leavitt, Boston, Mass., J. F. Dickinson, agent, 89 Beaver-street, for the best sewing machine. Silver medal.

Charles Morey, 16 Platt-street, for an excellent sewing machine. Diploma.

Leonard Smith, Troy, N. Y., for the best smut machine. (Gold medal having been before awarded.) Diploma.

F. Harris & Sons, Brooklyn, L. I., for an excellent smut machine. Silver medal.

Lowell Machine Shop, Lowell, Mass., for the best large size engine lathe. Gold medal.

D. D. Badger & Co., 44 and 46 Duane-street, for an excellent large size engine lathe. Silver medal.

A Inslee, & Co., Newark, N. J., for the best engine lathe, (second size,) Silver medal.

E. & S. D. Gould, Newark, N. J., for an excellent engine lathe, (second size.) Diploma.

Thomas J. Tindall, 23d and 24th-street, 5th Avenue, for the best engine lathe, (third size.) Silver medal.

O. Snow & Co., Meriden, Conn., for an excellent engine lathe, (third size.) Diploma.

J. Stewart Gwynne, 96 John-street, for the best force pump. Gold medal.

Alexander Stiven, 58 and 60 Vesey-street, for an excellent force pump. Silver medal.

Smith & Starbuck, Troy, N. Y., for a good force pump. Dip.

Sherwood & Fitzgerald, 148 Water-street, for the best iron safe. Silver medal.

Benjamin Sherwood, 147 Water-street, for an excellent iron safe. Diploma.

Edward Harrison, New Haven, Conn., for the best portable mill. Gold Medal.

Charles Ross, Rochester, N. Y., for an excellent portable mill. Silver medal.

Thomas I. Moody, Bridgeport, Conn., for a good portable mill. Diploma.

Robert Wilson, Houston, Texas, J. G. Miner, agent, 19 Nassau-street, for the best brick moulding machine. Silver medal.

Alfred Hall, Perth Amboy, N. J., for an excellent brick moulding machine. Diploma.

Myers & Gardiner, N. Y., for the best pump. Silver medal.

J. Dennison, Newark, N. J., for an excellent pump. Diploma.

J. A. Fay & Co., Keene, N. H., for the best boring and morticing machine. Silver medal.

N. Hunt & Co., Boston, Mass., for an excellent boring and morticing machine. Diploma.

T. F. Strong, 548 Pearl-street, for the best filters. Silver medal.

Mrs. Sweet, 21 Renwick-street,

A. Fessenden, Boston, Mass.,

For excellent filters. Diploma to each.

F. H. Bartholomew, N. Y., for the best hydrant. Silver medal.

John D. Haines, 351 Grand-street, for an excellent hydrant. Silver medal.

William Gee, 47 Eldridge-street, for an excellent hydrant. Silver medal.

Abner Chapman, Fairfax, Vt., for the best water wheel. Silver medal.

C. W. Sykes, 186, 6th Avenue,

A. Earle, 70 Washington-street,

For excellent water wheels. Diploma to each.

Fisher & Morris, Trenton, N. J., Clark & Wilson, agents, 13 Cliff-street, for the best anvils. Gold medal.

Joseph Goldie, 133 Attorney-street, for excellent anvils. Silver medal.

H. Miller & Co., Astoria, L. I., for the best lifting jack. Silver medal.

William Ballard, 7 Eldridge-street, for an excellent lifting jack. Diploma.

Lowell Machine Shop, Lowell, Mass., for the best upright drill. Silver medal.

Inslee & Co., Newark, N. J., for an excellent upright drill. Diploma.

Fowler M. Ray, 98 Broadway, for the best India rubber car springs. (Gold medal having been before awarded.) Diploma.

E. & T. Fairbanks & Co., St. Johnsbury, Vermont.

Duryee, Forsythe & Co., 205 Pearl-street, for depot scales. (No perceptible difference.) Silver medal to each.

F. J. Austin, Centre-street, cor. Reade, for the best embossing press. Gold medal.

David Dick, corner of Jane and Washington-streets, Joseph E. Holmes, agent, for an excellent embossing press. Diploma.

Lowell Machine Shop, Lowell, Mass., for an improved iron planer. Gold medal.

A. W. Whitney, Woodstock, Vt., for the best tinners' machines. Silver medal.

Roys & Wilcox, Berlin, Conn., Logan, Vail & Co., 25 Cliff-street, for an excellent tinners' machine. Diploma.

John S. Hall, Columbus, Ohio, for a patent rolling mill, for rolling irregular shapes. Silver medal.

J. W. Cochran, 52 South-street, for a machine for sawing ship timber. Gold medal.

American Chair Co., Troy, N. Y., for patent spring chairs and piano stools. Gold medal.

E. & S. D. Gould, Newark, N. J., for a geer cutting machine. Silver medal.

T. O. Leroy & Co., 261 Water-street, for block tin pipe. Silver medal.

Ransom Cook, Saratoga Springs, for a returning blast pipe or double tuyre. Silver medal.

J. A. Fay & Co., Norwich, Conn., for a sash moulding and planing machine. Silver medal.

Noyes & Hutton, Troy, N. Y., W. M. Arnold & Co., agents, 240 Broadway, for a patent spring iron bedstead. Silver medal.

Moody & Marsh, Bridgeport, Conn., for a flour bolter. Silver medal.

Alex. Stiven, 58 and 60 Vesey-street, for a parallel vice. Silver medal.

George K. Snow, Boston, Mass., for a book and newspaper folding machine. Silver medal.

Reese & Hoyt, 35 Spruce-street, for very superior machine belting. Gold medal.

William Burdon, Brooklyn, L. I., for a steam engine of 20 horse power Gold medal.

Samuel Bryant, 97 Columbia-street, for an upright steam engine. Silver medal.

Charles F. Mann, Fulton Works, Troy, New-York, for a portable five horse steam engine and boiler. Silver medal.

Joshua Lowe, 27 Dey-street, for a regulating expansion valve. Silver medal.

Lowell Machine Shop, Lowell, Mass., for McCulley's spinning frame. Gold medal.

Charles Graff, Philadelphia, for a lath machine. Silver medal.

Leverett Treadwell, 683 Broadway, for a horizontal brake, for preventing collisions, etc., on railroads. Diploma.

Abram Longbottom, Broadway, for a gas apparatus. Silver medal.

Brown, Stilwell & Zeh, Albany, New-York, for a patent leather splitting machine. Silver medal.

John Greacen, jr., 98 Broadway, for patent India rubber steam packing. Silver medal.

E. and T. Fairbanks & Co., St. Johnsbury, Vermont, Fairbanks & Co., agents, 89 Water-street, for 33 feet R. R. scales. Gold medal.

T. C. Avery, 79 Charlton-street, for a magnetic multiplying engine. Silver medal.

H. W. Bennett, Rutland, Vt., for a model locomotive. Silver medal.

S. Ford, Staten Island, for dry pressed bricks. Silver medal.

Daniel Adee, 107 Fulton-street, for American cast steel. Silver medal.

James Benton, Newark, N. J., for a model of a furnace for making wrought iron direct from the ore with anthracite coal. Gold medal.

William R. Nevins, 87 Eldridge-street, for models of cracker machines. Silver medal.

J. J. Bruce, 205 Cherry-street, for a ship biscuit and cracker machine. Diploma.

S. W. & J. Bullock, 47 Ann-street, for a self operating progressive power oil press. Silver medal.

Slaughters & Perry, Fredericksburgh, Va., for a rope cordage machine. Gold medal.

J. B. & C. F. Blakeslee, Newtown, Connecticut, Andrews and Jessup, agents, 70 Pine-street, for a wool carding machine. Gold medal.

A. M. Eastman, Boston, Massachusetts, for Dunnis's thermo-electrical telegraph for showing the temperature of steam in boilers. Silver medal.

Robert Eastman, Concord, N. H., for a stone planing and grooving machine. Gold medal.

William Waldron, New Brunswick, New Jersey, H. H. Day, 23 Courtland-street, for a paper hanging polishing machine. Silver medal.

Willard Day, Brooklyn, Long Island, for an ingeniously constructed sub-marine lamp. Gold medal.

William Ballard, 7 Eldridge-street, for models of cemetery fences. Silver medal

George W. Hoyt, Lafayette, Indiana, for patent warehouse scales. Silver medal.

William Trapp, jr., Ithaca, New-York, for a patent barrel machine. Gold medal.

A. H. Wright, 267 Cherry-street, for a hot and cold air furnace for making pig iron. Silver medal.

Joseph Adams & Son, Hadley, Mass., for a machine for cutting felloes. Silver medal.

Reuben Daniel, Woodstock, Vermont, for a wool picker. Silver medal.

William Lennox, Jane, corner Washington-street, for finished plane irons. Silver medal.

Charles Howland, 372 Greenwich-street, for a telegraph bell. Silver medal.

Warren S. Bartle, Newark, New-York, for a water regulator for steam boilers. Silver medal.

D. Griffin, 192 Broadway, for a fuel saving apparatus. Gold medal.

Knight Reed, New Haven, Connecticut, for a patent sugar boiler. Silver medal.

A. L. Mowry, Springfield, Mass., for a self connecting car coupling. Diploma.

G. M. Bull, 134 Bowery, for Maynard's improved sanding machine. Diploma.

William King, 81 John-street, for chain bolts. Diploma.

George Faber, Canton, Ohio, J. P. Pirsson, agent, 5 Wall-street, New-York, for magnetic water guages. Gold medal.

Edward Flagler, 211 Water-street, for blacksmiths' and ship portable forges. Diploma.

Edward Flagler, 211 Water-street, for improved jewelers' portable furnace and bellows. Diploma.

A. B. Wood, 27 West-street, for boiler flues. Diploma.

W. Wright, 134 West 13th-street, for condensers for drawing wool and other fibre. Diploma.

H. B. Taylor, 781 Washington-street, for silversmiths' shears. Diploma.

F. & T. Townsend, Albany, New-York, for chilled rollers for rolling gold and silver. Diploma.

William J. Valentine, New-York, for a patent self calculating scale. Diploma.

James Nind, 45 Ann-street, for improved embossing or seal press. Diploma.

William Jones, 44 10th avenue, for a railroad grade indicator. Diploma.

Engine Co., No, 22, for a fire engine. Diploma.

F. M. Lane, 680 Greenwich-street, for a power press. Diploma.

M. P. Coons & Akin, Rensselaer county, New-York, for Black's steam, air and water engine. (Silver medal having been before awarded.) Diploma.

H. W. Cary, for rotary fire engine pump. Diploma.

Truslow & Brothers, for a patent collapsible gutta percha oil can. Diploma.

Butz, Levan & Co., 106 Elm-street, for silver basin cocks and bibbs. Diploma.

S. G. Cornell & Co., 243 Water-street, for lead pipe. Diploma.

H. Griffin, 114 Nassau-street, for bookbinders' shears. Diploma.

Duncan & West, New-York, for a mangling machine. Diploma.

Joseph Wenworth, Montgomery county, New-York, for a carpet cleaning machine. Diploma.

John J. Weeks, Buckram, Queens county, L. I., for a rotary morticing machine. Diploma.

W. & B. Douglas, Middletown, Connecticut, for pumps, hydraulic rams and bolts. Diploma.

J. E. Holmes, 794 Washington-street, for Dick's patent copying press. (Silver medal having been before awarded.) Diploma.

J. A. Fay & Co., Keene, N. H., for a cutter head and morticing machine for hubs. Diploma.

L. A. Swart, 275 7th Avenue, for a card press. Diploma.

Sator & Co., Troy, New-York, for wrought iron nuts. Diploma.

G. Smith, for well buckets and wheels with chains. Diploma.

Rikeman & Seymour, Peekskill, New-York, for portable forges and bellows. Diploma.

Peck, Smith & Co., Southington, Mass., for a geared coffee and spice mill. Diploma.

Edward Flagler, 211 Water-street, for a dentist's forge and furnace. Diploma.

Sickles & Newcomb, 15 Gold-street, for a blacksmith's bellows. Diploma.

E. and T. Fairbanks & Co., St. Johnsbury, Vermont, Fairbanks & Co., 89 Water-street, for an iron rack scale, with India rubber spring. Diploma.

E. and T. Fairbanks & Co., St. Johnsbury, Vt., Fairbanks & Co., 89 Water-street, for grocers' and counter scales. Diploma.

E. and T. Fairbanks & Co., St. Johnsbury, Vt., Fairbanks & Co., 89 Water-street, for even balances. Diploma.

W. W. Hill, Greenpoint, L. I., for a double and single tackle block. Diploma.

Gideon Hotchkiss, Windsor, Broome county, New-York, for a counter bridge and frame block for a grist mill. Silver medal.

Isaac Ayres, 83 Fulton-street, for scales and nest of weights. Diploma.

Thomas T. Kelley, 96 Pearl-street, for belt lacing. Diploma.

C. Carpender, 424 Broadway, for a piano forte pin machine. Diploma.

William Kingsley, 424 Broadway, for a pin machine. Diploma.

Gideon Hotchkiss, Windsor, Broome county New-York, for Hotchkiss's equilibrium noddle irons for saw mills. Diploma.

Bookhout & Coehen, 118 Nassau-street, for a machine for finishing morocco. Diploma.

John W. Hope, Beaver Brook, New-York, for a model of a brick machine. Diploma.

Charles Perley, 114 Columbia-street, for an anchor stopper and side wrench. Diploma.

O. & C. Bush, Waterford, Connecticut, Clark and Wilson, agents, 13 Cliff-street, for chain bolt. Diploma.

Frank W. Jenkins, 23th-street, for a miniature high pressure steam engine with boiler. Diploma.

Frederick Scheurer, 56 Chatham-street, for workmanship on scales. Diploma.

Joseph Sweet, Penn., for excavating scraper. Diploma.

Street & Johnson, Brooklyn, for a shingle machine. Diploma.

Barron Brothers, 6 Platt-street, for an improved mud chest, blow pipe, and portable blast furnace. Diploma.

Allen & Day, Brooklyn, for a sub-marine plough, for burying telegraph wire so as to be out of reach of ships' anchors. Diploma.

H. S. Berry & Co., Westerly, R. I., for Stillman's saw temple. Diploma.

Joseph Robidoux, 198 Green-street, for a patent scale beam. Diploma.

William Maguire, Cincinnati, Ohio, for a plank road. Diploma.

Benjamin F. Miller, 74 Trinity-place, for patent iron stairs. Diploma.

Alexander Stiven, 58 and 60 Vesey-street, for an expanding boring tool. Diploma.

Duryee, Forsyth & Co., 305 Pearl-street, for a R. R. manifest and letter copying press. Diploma.

Thomas J. Wells, 29th-street and 11th Avenue, for a saw mill and saw mill irons. Diploma.

Charles Gregg, 62 and 64 Gold-street, for stop valves. Diploma.

Thomas Parkinson, Naples, Ontario county, New-York, for a hanging gate. Diploma.

L. Nagelschmidt, 84 William-street, for a printing hand form for printing oil cloth. Diploma.

Joshua Lowe, 27 Dey-street, for a lubricating pump for steam cylinder. Diploma.

T. Davison, 76 6th-street, for a machine for salting meat. Diploma.

B. Sheridan, 45 Ann-street, for a notarial press. Diploma.

William Hovey, Worcester, Mass., for the best cylinder of knives for straw cutters. Diploma.

Henry Eling, Brooklyn, for plumbers' brass work. Diploma.

Leonard Smith, Troy, New-York, for a buckwheat scourer. Diploma.

Joseph Laubrau, 45 Warren-street, for a model of an air engine. Diploma.

Reynolds & Co., Centre-street, for superior water and steam cocks. Silver medal.

Butz, Levan & Co., 106 Elm-street, for steam guage cocks and bibbs. Diploma.

E. & J. Henshaw, Boston, Mass., for a patent prison door. Dip.

James Lightbody, Jersey City, for an ingrain carpet machine. Diploma.

Levi Bissell, 43 Marion-street, for a patent steam elastic joint. Diploma.

Joseph Goldie, 133 Attorney-street, for vices. Diploma.

J. F. Sloper, 76 Forsyth-street, for copper rivets and burrs. Dip.

William Platt & Co., Waterford, N. Y., for stocks and dies. Dip.

Barron Brothers, 6 Platt-street, for portable furnaces, with self-regulating tuyere. (Gold medal having been before awarded.) Diploma.

E. Wade, 17 Peck-slip, for a gold scale. Diploma.

J. Peck, Syracuse, N. Y., for a metalic R. R. spring. Diploma.

Duryee, Forsyth & Co., 205 Pearl-street, for a scale with rack for weighing leather. Diploma.

Duryee, Forsyth & Co., 205 Pearl-street, for counter scales. Dip.

F. M. Ray, 98 Broadway, for model of India rubber spring centre R. R. wheel. Diploma.

Newark Chemical Iron Co., Pompton, N. J., for a R. R. wheel tire. Diploma.

David Dick, J. E. Holmes, agent, Jane, corner Washington-street, for an anti-friction boiler plate-shears and punch. Gold medal.

C. Winch, Nashua, N. H., for a model of a spike machine. Silver medal.

Stillman, Allen & Co., Novelty Works, Dry Dock, for the engines of the steamer "Florida." Gold medal.

D. Griffin, corner of John-street and Broadway, for a mode of heating air to be used in large manufacturing establishments. Gold medal.

H. Stanton, U. S. A., for a mode of lightering vessels over bars. Silver medal.

Rankin & Ray, 104 Bowery, for stocking machines. Diploma.

Abram Patterson, Rush, Pa., for an improved working column to prevent explosions of steam boilers. Diploma.

Minors' Work.

Robert Thompson, 32, 9th Avenue, for a small hand lathe. $5 and a certificate.

A. Heckert, Williamsburgh, L. I., for model of a steam engine. $5 and a certificate.

S. E. Scripture, Greenpoint, L. I., for a box setting machine. $10 and a certificate.

E. Thompson, Jane, corner Washington-street, for a model of steam engine. $3 and a certificate.

Patrick McCormick, 26th-street and 1st Avenue, for a small foot lathe. $3 and a certificate.

MACHINE MOULDINGS.

H. Chatain, 360 Broome-street, for the best machine mouldings. Silver medal.

P. Weiler & Didier, 186 Mulberry-street, for machine mouldings. Diploma.

MANUFACTURERS' ARTICLES, REEDS, SHUTTLES, &C.

George Kirk, 58 Henry-street, Brooklyn, for the best weavers' reeds. Silver medal.

J. A. Gowdey & Son, Providence, R. I., Andrews & Jessup, agents, 70 Pine-street, for excellent weavers' reeds. Diploma.

J. B. Sargent, 24 Cliff-street, for the best machine cards. Silver medal.

E. J. Skerritt, Pompton, N. J., Andrews & Jessup, agents, 70 Pine-street, for the best bobins and spools. Silver medal.

MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS.

F. Meyers & Co., Philadelphia, for the best standards, scales, weights and measures. Silver medal.

Journeymen Scale Makers Co., 157 Water-street, for scales, beam and frame. Diploma.

Henry Fitz, 237 Fifth-street, for the best achromatic telescope. Gold medal.

James Rodgers, 413 Fulton-street, for the best telegraph register. Gold medal.

F. A. Sibenmann, 154 Fulton-street, for a case of drawing instruments. Diploma.

Jacob Goodman, for platform scales. Diploma.

W. Watkins & Son, Bristol, Conn., J. W. Watkins, agent, 81 John-street, for a superior plumb and level. Silver medal.

Fehrens & Albrecht, 136 Nassau-street, for a fine chemical balance. Diploma.

Amos Abbott, Manchester, N. H., for a horometer. Diploma.

C. C. Harrison, 293 Broadway, for daguerreotype cameras. Dip.

A. Derne, 376 Pearl-street, for opera glasses. Diploma.

A. D. Olmstead, 367 Broadway, for an improved Voltaic arrangement of the galvanic battery for medical purposes. Silver medal.

W. H. Van DerVeer, Geneva, N. Y., for an improved log rule. Silver medal.

W. H. Van DerVeer, Geneva, N. Y., for arithmetical tables. Diploma.

Minors' Work.

A. Francis, 23 Murray-street, for the best drawing instruments. $5 and a certificate.

John J. Purdy, 120 Water-street, for a ship's compass, $3 and a certificate.

METALS.

Glenden Rolling Mill Co., E. Boston, Mass., Henry Brevort, agent, for the best specimen of iron. Gold medal.

National Paint & Metal Co., O. Mc Daniel, agent, 51 Liberty-street, for specimens of Franklinite iron. Silver medal.

James Renton, Newark, N. J., for specimens of iron. Diploma.

Sussex Zinc and Copper Mining and Manufacturing Co., Newark, N. J., A. C. Farington, agent, 51 Liberty-street, for pure zinc and zinc ore. Gold medal.

NEEDLE WORK, EMBROIDERY, AND FANCY ARTICLES.

Mrs. Mary Cleveland, 603 Broadway, for the best shirts. Silver medal.

Mrs. Van Houten, 82 Nassau-street, for excellent shirts. Dip.

Mrs. E. Haight, 200 Grand-street, for excellent shirts. Dip.

Brodie & Bell, 61 Canal-street, for the best ladies' sacks and mantilla embroidery. Silver medal.

Beekman & Cutter, 66 Canal-street, for excellent ladies' sacks. Diploma.

Mrs. W. Simmons, 564 Broadway, for the best case of bonnets. Silver medal.

Mrs. William Rallings, 191 Spring-street, for excellent bonnets. Diploma.

C. Linherr, 293 Broadway, for the best ornamental hair work. Silver medal.

Julius & Robert Link, 181 Broadway, for fine ornamental hair work. Diploma.

Miss C. Nicols, 49 East Broadway, for flowers made of floss silk. Silver medal.

Lion Gilleaume, 122 William-street, for the best artificial leaves. Silver medal.

Edmonds & Gill, 88 Cedar-street, for the best artificial flowers. Silver medal.

Miss E. Ross, 171½ South 4th-street, Williamsburgh, for the best wax flowers. Diploma.

Mrs. L. J. Hazlet, 60 6th Avenue, for good wax flowers. Dip.

Joseph Earl, L. I., for the best paper flowers. Diploma.

Mrs. A. Lagrave, Brooklyn, L. I., for good paper flowers. Dip.

Theodore Mercer, 8 North William-street, for peps for flowers. Diploma.

Edmonds & Gill, 88 Cedar-street, for the best wax fruit. Silver medal.

Mrs. S. A. Reed, 8 Leroy-street, for the best shell work. Silver medal.

Mrs. F. P. Medina, Newark, N. J., for excellent shell work. Diploma.

E. Combs, 268 Grand-street, for the best regalia. Silver medal.

M. J. Drummond, 331 Grand-street, for excellent regalia. Dip.

Amelia Newstadt, 404 Broadway, for silk embroidery. Dip.

Mrs. Christiana Porter, 542 Washington-street, for the best muslin embroidery. Diploma.

Sarah K. Lynds, Brooklyn, L. I., for an excellent muslin embroidery. Diploma.

Mrs. Eliza C. Perkins, Tuscaloosa, Alabama, for embroidery. Diploma.

Mrs. Cleveland, 603 Broadway, for the best dressing gown. Diploma.

Mrs. Reisky, 657 Broadway, for the best chenille embroidery. Silver medal.

Mrs. P. L. Robinson, North Bennington, Vt., for excellent chenille embroidery. Diploma.

Miss Matilda Schmahl, 189 Second-street, for the best single stitch worsted work. Silver medal.

Miss Catherine J. Braisted, 56 Broome-street, for the best double stitch worsted work. Silver medal.

Miss Anna McNepsie, 49th-street, for excellent double stitch worsted work. Diploma.

Mrs. Hall, Cleveland, Conn., for the best raised work. Silver medal.

Mrs. J. H. Brown, 244 West 19th-street, for excellent raised work. Diploma.

Mrs. Lizzie Lewis, 263 Broome-street, for the best embroidered slippers. Diploma.

Mrs. M. A. Johnson, Staten Island, for the best embroidered suspenders. Diploma.

Miss J. Graham, 9 State-street, for the best worsted work baskets. Diploma.

Miss A. Smith, 48th-street, for excellent worsted work baskets. Diploma.

Mary M. Couenhoven, New Brunswick, N. J., for the best worsted mat. Diploma.

Mrs. B. O'Donnel, 3d Avenue, corner 20th street, for a cape made of milk weed. Diploma.

John Carpenter, Brooklyn, for excellent chenille. Diploma.

E. H. L. Kurtz, 416 Pearl-street, for a baby jumper. Diploma.

Mrs. S. Pearson, 33 Forsyth-street, for worsted mittens and children's socks neatly made. Diploma.

Miss Brown, 168 Henry-street, for slippers and cushion. Dip.

Sarah Judson, 111 9th Avenue, for a toilet cover. Diploma.

Mary G. De la Tour, 239 Bowery, for a beautifully embroidered cushion and handkerchief. Silver medal.

Miss Anna M. Garfield, Troy, N. Y., for an embroidered infant's blanket. Diploma.

Miss C. Withers, Charleston, S. C., for a basket made of pine burr. Diploma.

John Blackwell, Atlantic-street, Brooklyn, for a sewing stand. Diploma.

Miss Sarah F. Cunningham, 276 Grand-street, for the best fire screen. Diploma.

M. A. Anderson, 63 Clinton-street, for excellent fire screens. Diploma.

Miss Quirk, 490 Broadway, for a bead bag. Diploma.

Charles F. Bauer, 74 Fulton-street, for Jenny Lind's castle. Diploma.

Mrs. B. Hicky, N. Y., for excellent specimens of knitting. Dip.

T. Lloyd, 63 Beaver-street, for cleaned kid gloves. Diploma.

Lucy Curtis, Southbury, Conn., for silk stockings. Diploma.

Elizabeth Ann Ferguson, 147 West 21st-street, for a worked lace veil. Diploma.

Mrs. Benjamin, Mount Pleasant, Penn., for yarn corded and spun by a lady 105 years old. Diploma.

Mrs. Jupiter Hesser, 421, 6th Avenue, for the best knitted quilt. Diploma.

Mrs. Mary Lyons, 39th street and 4th Avenue, for a very handsome knitted spread. Diploma.

Miss R. H. Clarke, Albany, N. Y., for the best silk embroidered quilt. Diploma.

Miss Sarah Secor, Amos-street, for an excellent silk quilt. Dip.

Mrs. Maria M. Root, 98 Nassau-street, for the best imitation Marseilles quilt. Diploma.

Adelia M. Coxer, Brooklyn, for an excellent Marseilles quilt. Diploma.

Mrs. Head, Leesburgh, Va., for the best patchwork quilt. Dip.

Miss S. Wilcox, 172 6th-Avenue, for an excellent patchwork quilt. Diploma.

Edward Ramski, 116 1st-Avenue, for a basket made of cloves. Diploma.

Louis Loucet, 96 Gold-street, for a bronze flower stand. Dip.

Caroline Baer, 43 Henry-street, for pearl flowers. Diploma.

Miss Mary D. Price, 21 6th-Avenue, for a needle case. Dip.

Miss Elizabeth Cook, 80 Canal-street, for neatly made dress caps. Diploma.

Mrs. Frances Thornton, 392 8th-street, for samples of laundry work. Diploma.

Mrs. Willis Patten, N. Y., for children's knitted hose. Dip.

Miss H. Hoppell, 583 4th-street, for the best crotchet quilt. Dip.

Mrs. S. B. Mather, 120 Columbia-street, for silk embroidery. Diploma.

Mrs. B. L. Schweizer, 31 Pearl-street, for a worsted flower basket. Diploma.

Mrs. L. D. Wilson, 382 Bleecker-street, for excellent wax fruit. Diploma.

Miss Ellen Kemble, Beach-street, N. Y., for a very handsome and neatly made Shetland wool shawl. Diploma.

S. B. Andrews, 32 Green-street, for rustic needle work. Dip.

Mrs. E. Nevison, 119 Perry-street, for a table cover. Silver med.

P. G. Fowler, 37 Forsyth-street, for a model of ladies dress cutting. Diploma.

Miss E. Lane, Bushwick, L. I., for worsted work. $3 and a certificate.

PAPER HANGINGS, UPHOLSTERY, &C.

Beavan & Perry, 65 Sands-street, Brooklyn, for the best gilt and velvet paper hangings. Silver medal.

J. & T. Jones & Smith, 137 Broadway, for excellent gilt and velvet paper hangings. Diploma.

George A. Curtis, 48 Fulton-street, Brooklyn, for superior specimens of varnished marble paper hangings. Diploma.

Edward Cranston, 64 Laurence-street, Brooklyn, for superior specimens of unvarnished paper hangings. Diploma.

David Baird, 421 Hudson-street, for a superior spring matrass. Silver medal.

J. M. Fleming, 59 Beekman-street, for a superior spring matrass. Diploma.

A. Mellen & Co., corner Mott and Chatham-street, for good specimens of curled hair. Diploma.

PAPIER MACHE AND JAPANNED WORK.

Moore & Browning, 25 Howard-street, for inlaid pearl papier maché tables. Silver medal.

Cook & Hill, 44 Fulton-street, for japanned tables. Diploma.

PENMANSHIP.

A. H. Wheeler, 251 Broadway, for the best specimen of penmanship. Silver medal.

W. C. Morrison, 9 Cottage Row, for an excellent specimen of penmanship. Diploma.

PERFUMERY.

Xavier Basin, Philadelphia, Pa., for the best perfumery with choice soaps. Silver medal.

H. P. & W. C. Taylor, Philadelphia, Pa., for the best transparent soap and oleophane. Silver medal.

William Johnson, 55 Frankfort-street, for the second best transparent soap. Diploma.

W. Hull's Son, 108 Cliff-street, for the best general assortment of fancy and other soaps. Silver medal.

Lewis Michel, 108 Orange-street, Brooklyn, for perfumery. Dip.

W. Walker, 156 Cherry-street, for perfumery. Diploma.

Samuel Campbell, 127 Allen-street, for cologne water. Dip.

PIANO FORTES.

D. Benson & Co., Buffalo, N. Y., for the best piano forte. Silver medal.

J. H. Grovestein, 122 Grand-street, for a good piano forte. Silver medal.

T. Gilbert & Son, Boston, Waters & Berry, agents, 447 Broadway, for a piano forte with an æolian attachment. Diploma.

Hugh Cottier, 162 Atlantic-street, Brooklyn, for the best diatonic and piccali flute. Silver medal.

C. G. Christman, 404 Pearl-street, for the workmanship on a diatonic flute. Diploma.

C. G. Christman, 404 Pearl-street, for fine brass instruments, claronet and hoeboy. Silver medal.

J. Jacobs, 100 Chatham-street, for the best banjo. Diploma.

G. Kilbourne, Albany, N. Y., for the best tamborine. Diploma.

G. Kilbourne, Albany, N. Y., for superior drums. Diploma.

W. H. Davis & Co., 67 McDougal-street, for an organ with 6 stops. Diploma.

Joseph Rogers, jr., for transparent drum heads. Diploma.

PLATING.

N. G. Dubois, 16 Concord-street, Brooklyn, for the best house plating. Silver medal.

Coombs & Anderson, 85 Mercer-street, for the best engine plating. Silver medal.

PREPARATIONS OF NATURAL HISTORY.

Miss Caroline E. Johnson, Staten Island, for case of insects. Diploma.

Thomas Floyd, 63 Beaver-street, for butterflies and gold bugs. Diploma.

W. A. Jackson, Cornwall, for case of insects. Diploma.

Willard Felt, 191 Pearl-street, for fine specimens of slate. Diploma.

REGATTA.

October 5, 1850.

F. D. Bigelow, for the best sailing in 19 foot working boat, James Green, built by William Crolius, with one sail, without oars or rudder. $12.

William Robbers, for the second best sailing in 19 foot working boat, Spring-street Packet, built by M. Roberts, with one sail, without oars or rudder. $8.

James Lee, for the best rowing with one pair of sculls, in boat C. J. Thomas, built by C. J. Thomas, distance 5 miles, time 40 minutes. $20.

Charles Thomas, for the second best rowing, with one pair sculls, in boat Annetta, built by G. C. Newman, distance 5 miles, time 41 minutes. $5.

October 12, 1850.

James Lee and Hugh Curran, for the best rowing with two pair of sculls in boat Lieut. M. Murray, built by C. J. Thomas, distance 5 miles, time 31 minutes. $35.

Charles Thomas & G. Decker, for the second best rowing with two pair of sculls, in boat Battery Pet, built by John Letts, distance 5 miles, time 32 minutes. $15.

Charles Thomas, F. D. Bigelow, Edward Coady, Owen Mulany, Frances Palmerton, cockswain, for the best rowing with four oars in 30 foot boat, Gen. Z. Taylor, built by John Letts, distance 5 miles, time 29 minutes. $75.

John Manzano, J. Mc Brier, J. Watson, Joseph Byrne, Emerald Wheeler, cockswain, for the second best rowing with four oars, in 30 foot boat, Adaline, built by C. L. Ingersoll, distance 5 miles, time 30 minutes. $25.

October 17, 1850.

W. L. Force, builder of the jib and main-sail boat, A. A. Phillips, the winner in the race between boats A. A. Phillips, Naomi, Reindeer, Nameless, Greenville, distance 10 miles, time 1 hour and 3 minutes. Silver cup. $15.

William Smith, builder of the jib and main-sail boat Greenville, the second best in the race between the boats A. A. Phillips, Naomi, Reindeer, Nameless, and Greenville, distance 10 miles, time 1 hour and 35 minutes. Silver cup. $10.

October 19, 1850.

Charlee Price, for the best rowing with one pair of sculls in boat Jenny Lind, built by E. Loper, distance 5 miles, time 46 minutes. $15.

Charles Thomas, for the second best rowing with one pair of sculls, in boat Geo. Washington, built by John Letts, distance 5 miles, time 47 minutes. $10.

SADLERY, HARNESS AND TRUNKS.

L. Cantel, 1 Barclay-street, for the best specimens of trunks and hat cases. Silver medal.

E. Conant, 161 Canal-street, for the second best specimen of trunks. Diploma.

James Craven, 32 Canal-street, for the best set of double harness, (made for President Fillmore.) Gold medal.

Van Blarcom & Dixon, Paterson, N. J., for an excellent set of double harness. Silver medal.

J. & R. Lowden, 82 Bleecker-street, for the best set of single harness. Gold medal.

Van Blarcom & Dixon, Paterson, N. J., for an excellent set of single harness. Silver medal.

L. J. Loyd, Albany, N. Y., for a set of single harness. Silver medal.

George Fisher, Raleigh, N. C., for a saddle. Silver medal.

Cornell, Cowles & Co., New Haven, Conn., for a self-adjusting pad tree. Silver medal.

Nathan Post, East Cleveland, Ohio, for an improved patent spring safety bar stirup. Gold medal.

Ezra E. Bratton, Philadelphia, for improved hames. Diploma.

John H. Skid, corner of Fulton-street and Broadway, for a leather bag. Diploma.

R. H. Hann, corner of John-street and Broadway, for a leather bag. Diploma.

D. Galbraith, 231 West 16th-street, for a small morocco trunk. Diploma.

SIGN PAINTING AND BLOCK LETTERS.

Bean & Breidenbah, 118 Grand-street, for the best sign painting. Silver medal.

Leonard Ring, 79 Fulton-street, for excellent sign painting. Diploma.

B. F. Cragin, 20 Nassau-street, for the best block letters. (Silver medal having been awarded last year.) Diploma.

Minors' Work.

George Steel, 101 Nassau-street, for the best sign painting. $10 and a certificate.

John G. Quirk, 170 York-street, Brooklyn, for an excellent specimen of sign painting. $5 and a certificate.

Edward Little, 170 Centre-street, for a specimen of sign painting. $3 and a certificate.

RAW AND MANUFACTURED SILK.

Raw.

Mrs. C. Van Epps, Ovid, Seneca county, New-York, for the best cocoons. Silver medal.

Harriet Summy, Lancaster, Pa., for a bushel of pea-nut cocoons. The Van Schaick premium of $5 and a bronze medal.

L. S. Root, East Bloomfield, for a specimen of cocoons. Diploma.

John M. Summy, Manheim, Pa., for a bushel of paphos cocoons. The Van Schaick premium of $5 and a bronze medal.

John M. Summy, Manheim, Pa., for 10 lbs. of raw silk, very well reeled, clean and uniform. The Van Schaick premium of $10 and a bronze medal.

Manufactured silk.

Wilmer, Cannell & Co., Philadelphia, Pa., Stone & Co., agents, 48 Exchange Place, for the best printed silk handkerchiefs. Silver medal.

Crabtree & Wilkinson, Staten Island, for the second best printed silk handkerchiefs. Diploma.

R. Rennie, Lodi, N. J., G. Patterson & Co., agents, 40 Broad-street, for printed foulard silk. Silver medal.

James Millward, 31st-street and 8th Avenue, for excellent silk shawls. Gold medal.

E. R. Gurley, Mansfield, Conn., for silk twist. Silver medal.

Cheney Brothers, Manchester, Connecticut, E. H. Arnold, agent, 34 Beaver-street, for excellent sewing silk. Diploma.

Duncan McFarlane, 28th-street, for 14 pieces of silk ribbon. The Van Schaick premium of $10 and a bronze medal.

SILVER WARE.

Allcock & Allen, 341 Broadway, for superior silver ware. Gold medal.

T. J. Harris & Co., 177 Broadway, for well formed silver ware. Diploma.

John W. Greaton, 201 Broadway, for gold and silver extension pen and pencil cases. Silver medal.

Minors' Work.

P. H. Storck, 88 Nassau-street, Brooklyn, for a good specimen of chasing. $5 and a certificate.

W. H. Wood, 94 Amos-street, for a silver mug. $3 and a certificate.

STATIONERY, PRINTING, ETC.

Carson & Brothers, Dalton, Mass., Carson & Howard, agents, 281 Pearl-street, for the best writing paper. Silver medal.

Gill & Co., Nashua, N. H., N. P. Kimbell, agent, 47 Beekman-street, for superior card boards. Diploma.

Edwin Allen, South Windham, Connecticut, for a new and beautiful article of type to facilitate the education of the blind. Silver medal.

Stickney & Price, 130 Fulton-street, for a large assortment of labels for druggists, perfumers, etc. Diploma.

James Shaw, Providence, Rhode Island, for a patent portfolio. Diploma.

A. G. Fay, Concord, Mass., H. Jeroliman & Co., agents, 134 William-street, for the best lead pencils. Silver medal.

William Monroe, for excellent lead pencils. Diploma.

John H. Tobitt, 9 Spruce-street, for combination type to facilitate type setting. Silver medal.

STOVES, GRATES, AND RANGES.

Cooking Stoves and Ranges.

Jordan L. Mott, 264 Water-street, for the best cooking stove. (Gold medal having been before awarded.) Diploma.

William Abendroth & Brothers, 117 Beekman-street, for an excellent cooking stove. Silver medal.

R. B. Thompson, Brooklyn, for the best cooking stove, with water center. Silver medal.

J. R. and E. N. Hyde, 246 Greenwich-street, for the best cooking stove, with hot air furnace for heating adjoining rooms. Silver medal.

D. Bosworth, 56 Cliff-street, for an excellent cooking stove, with hot air furnace for heating adjoining rooms. Diploma.

B. P. Learned & Thatcher, Albany, New-York, for the best parlor cooking stove. Silver medal.

William Abendroth & Brothers, 117 Beekman-street, for an excellent parlor cooking stove. Diploma.

Jordan L. Mott, 264 Water-street, for the best kitchen range. Gold medal.

Philip Rolhaus, New-York, for an excellent kitchen range. Silver medal.

William Cobb, 211 Water-street, for a hot air furnace and range. Gold medal.

Alexander Marshall & Son, 407 and 409 Cherry-street, for beautiful specimens of enamelled ware. (Gold medal having been before awarded.) Diploma.

Thatcher and Hutchins, Troy, New-York, for a hot blast cook stove, flat heater and furnace combined. Diploma.

William Abendroth and Brothers, 117 Beekman-street, for parlor cooking stoves. Diploma.

M. C. Hull, 311 3d Avenue, for Bay State cooking stoves. Silver medal.

B. Wands & Co., 211 Water-street, for a cooking stove. Diploma.

C. Goodwin, 254 Water-street, for a cooking stove. Diploma.

Keyser and Guinand, 113 Beekman-street, for a cooking stove. Diploma.

Jagger, Treadwell & Co., Albany, New-York, for an air tight cooking stove, for wood or coal. Diploma.

George Pierce & Co., 300 Broadway, for a kitchen range. Diploma.

STOVES FOR WARMING, AND HOT AIR FURNACES.

Chilson, Allen, Walker & Co., 351 Broadway, for the best air warming and ventilating furnace. Gold medal.

George E. Waring, Stamford, Connecticut, for an excellent hot air furnace. Silver medal.

Gardner Chilson, Boston, Massachusetts, Chilson, Allen, Walker & Co., agents, 351 Broadway, for the best parlor stove. Silver medal.

Elihu Smith, Albany, New-York, for an excellent parlor stove. Silver medal.

Gardner Chilson, Boston, Massachusetts, Chilson, Allen, Walker & Co., agents, 351 Broadway, for the best open grate. Diploma.

H. G. Clark, Boston, Mass., Chilson, Allen, Walker & Co., agents, 351 Broadway, for a ventilating stove. Diploma.

B. Rodriguez, New Orleans, for an areothermes, hot air oven and cooking combined. Gold medal.

GRATES.

W. & N. Jackson, 238 Front-street, for superior grates. Gold medal.

SURGICAL INSTRUMENTS.

G. S. Brown, Hartford, Connecticut, T. Franklin Smith, agent, 488 Broadway, for the best abdominal supporter and body brace. Silver medal.

S. N. Marsh, 2 Courtland-street, for an excellent abdominal supporter and body brace. Diploma.

B. F. Palmer & Co., Philadelphia, Pa., for the best artificial leg. Gold medal.

Yerger & Ord, Philadelphia, Pa., for an excellent artificial leg. Silver medal.

J. R. Benjamin, 13 Beekman-street, for the best spring truss. Gold medal.

S. N. Marsh, 2 Courtland-street, for an excellent spring truss. Silver medal.

Charles C. Reinhardt, Baltimore, George Tiemann, 63 Chatham-street, for a spring truss with glass pad. Diploma.

William Cooley & Co., Middletown, Conn., for Banning's body brace. Diploma.

E. Waters, Troy, New-York, for the best breast pump. Silver medal.

UMBRELLAS AND PARASOLS.

Clyde & Black, 303 Broadway and 317 Grand-street, for the best umbrellas and parasols. Silver medal.

Calkins & Darrow, 34 Maiden Lane, for excellent umbrellas and parasols. Diploma.

VENTILATION.

Ransom Cook, Saratoga Springs, New-York, for the best method of ventilating buildings. Gold medal.

Ebenezer Knight, New-York, J. H. Penfield, agent, 19 Nassau-street, for a plan for the ventilation of the spaces between the timber and planks of a vessel, in order to prolong their duration. Gold medal.

WHIPS AND CANES.

Charles P. Caldwell, 18 Maiden Lane, for the best whips, etc. Silver medal.

James Russell, 38 Pearl-street, for a good specimen of whips. Diploma.

W. E. Rose, 37 Reade-street, for superior gold and silver mounted canes. (Silver medal having been before awarded.) Diploma.

WIGS AND TOUPEES.

Edward Phalon, 197 Broadway, for the best gentleman's wig and toupee. Silver medal.

Charles Bouagard, 5 Franklin-street, for an excellent gentleman's wig, and the best lady's wig. Diploma.

WOOLEN GOODS.

James Roy & Co., Watervliet Mills, West Troy, New-York, E. J. Anderson & Co., agents, 9 Broad-street, for the best black broad cloth. Gold medal.

Utica Globe Mills, Utica, New-York, Lawrence Trimble & Co., agents, 35 Broad-street, for excellent black broad cloth. Silver medal.

Wethered & Brothers, Baltimore, Maryland, for best doe skin cassimeres. Gold medal.

J. & R. H. Hotchkiss, Hotchkissonville, Connecticut, for excellent specimens of plain cassimeres. Silver medal.

Rochdale Mills, Rochester, New Hampshire, Nesmith & Co., agents, 52 Pine-street, for the best blankets. Gold medal.

Hall & Springfield, Rochester, New-Hampshire, Beals, Bush & Co., agents, 32 Broad-street, for the second best blankets. Silver medal.

Burlington Mills, Burlington, Vermont, Beals, Bush & Co., agents, 32 Broad-street, for the best fancy cassimeres. Gold medal.

Stafford Company, Stafford Springs, Connecticut, Mott, Stanton & Swan, agents, 22 Broad-street, for excellent fancy cassimeres. Silver medal.

Robert Rennie, Lodi, N. J., Godfrey, Pattison & Co., 43 and 45 Broadway, for the best printed cashmeres. Silver medal.

Manchester Print Works, Stone & Co., agents, 48 Exchange Place, for excellent printed cashmeres. Diploma.

Bay State Mills, Lawrence, Mass., Lawrence, Stone & Co., agents, 41 Broadway, for the best shawls. (Gold medal having been before awarded.) Diploma.

James Roy & Co., Watervleit, N. Y., for superior shawls. Gold medal.

D. Kellogg, Skaneateles, N. Y., Wolcott & Slade, 13 Broad-st.

W. Duncan & Son, Franklin, Essex Co., N. J., Richardson, Watson & Co., agents, 43 Exchange Place, for excellent shawls, (no difference being perceptible to the judges.) Silver medal to each.

Virginia Woolen Co., Richmond, Va., Atwater, Knapp & Woodruff, agents, 43 Broad-street, for blankets. Diploma.

Joseph Dean & Son, Newark, Delaware, Benjamin F. Seaver, agent, for merino jeans. Silver medal.

Gilbert & Stevens, Ware, Mass., Dale & Wright, agents, 24 Broadway, for white and scarlet flannels. Silver medal.

Cohoes Worsted Co., Cohoes Falls, N. Y., for worsted yarn. Gold medal.

Wm. Duncan & Son, Franklin, Essex Co., N. J., Richardson, Watson & Co., agents, 43 Exchange Place, for piano covers. Silver medal.

New Britain Knitting Co., New Britain, Conn., Mott, Stanton & Swan, agents, 22 Broad-street, for knit shirts. Diploma.

MISCELLANEOUS.

G. B. De La Vergne & Co., Elizabeth Port, N. J., for the best fluid machine oil. Silver medal.

A. Hinckley, 31 Front-street, for machinery oil, (a fair article.) Diploma.

D. D. Miller, 209 Water-street, for lanterns and trumpets. Dip.

S. J. Seely, 11 Park Row, for a barrel of excellent lime. Dip.

J. M. Smith, 468 Broadway, for a refrigerator. (Silver medal having been before awarded.) Diploma.

J. K. Bellows, 366 Broome-street, for a double dove tail. Dip.

Joshua Shaw, 142 Nassau-street, for superior glaziers' diamonds. Silver medal.

W. H. Kemp, 95 Canal-street, for superior gold leaf. (Silver medal having been before awarded.) Diploma.

George W. Noyes, Brooklyn, for a rustic chair. Diploma.

Augustus Thayer, Walden Bridge, Conn., for improved auger handles. Diploma.

Ezekiel Page, 20 West-street, for the best sweep. Diploma.

J. B. Gailhard, 456 Broadway, for bird cages. Diploma.

Joseph Kelly, 25 Fulton-street, for a bird cage. Diploma.

Asa Willis, 125 Cedar-street, for a plan for opening window shutters. Silver medal.

Labatier & Vailard, 132 Second-street, for razor strops. Dip.

Robert B. Montgomery, 312 Stanton-street, for scroll target. Diploma.

James Evans, 87 Warren-street, for fancy boxes. Diploma.

H. Jeroliman & Co., 134 William-street, for musical annuals. Diploma.

E. S. Mills, 6 Courtland-street, for shawl stands. Diploma.

John Santune, 19 Centre-street, for mettallic letters. Diploma.

William Brown, 256 Broadway, for a metallic child's crib. Dip.

F. S. Edwards, 189 6th Avenue, for egg powder. Diploma.

Reed & Co., White-street, for a good specimen of roofing slate. Diploma.

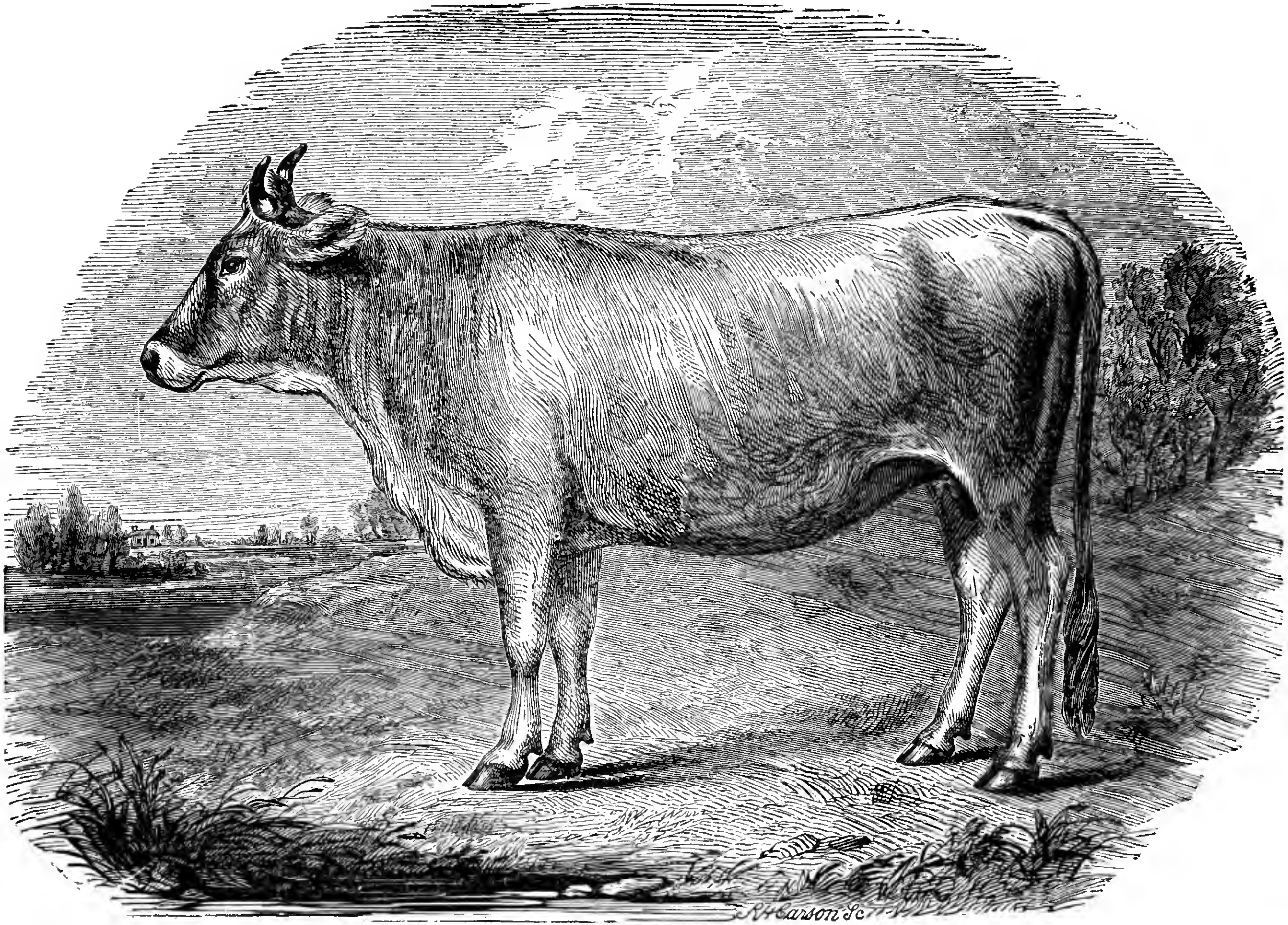
Wm. W. Fowler, 10 Suffolk-street, for a bedstead fastening. Diploma.

Clark & Solomon, 18 Fulton-street, for superior fancy whisk brooms. Diploma.

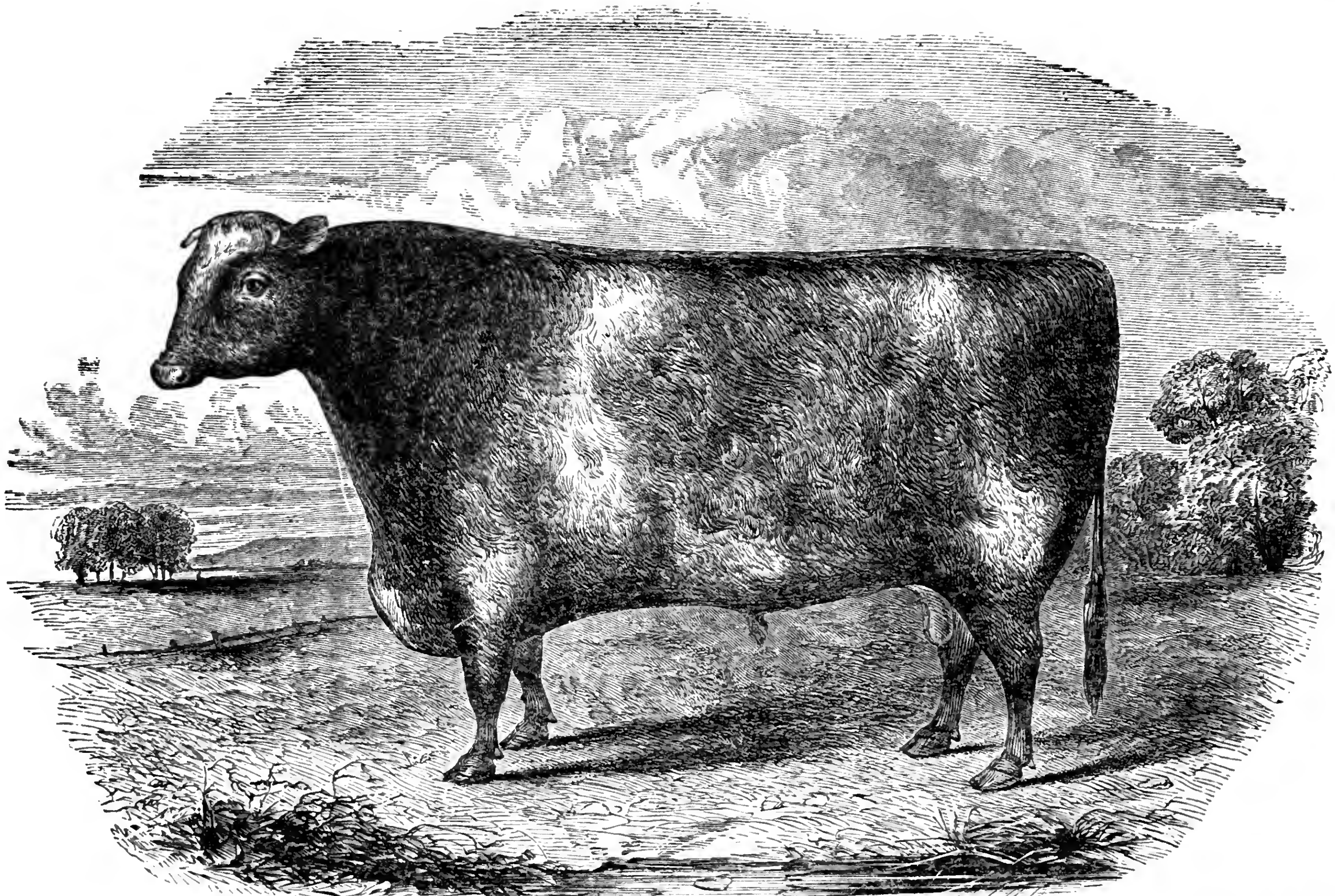
F. A. Rockwell, Ridgefield, Conn., for patent clasps. Diploma.

E. S. Pierce, Ohio, for a hydrostatic pen. Diploma.

Edward Schenck, 80 Water-street, for a seamless bag. Diploma.



IMPORTED HUNGARIAN HEIFER, two years old; property of Roswell L. Colt, Patterson, New Jersey.



EARL OF SEAHAM. (10,181); 3 years old, April, 1851. Bred by JOHN STEPHENSON, Esq., of Wolviston, Durham, England; imported by and property of AMBROSE STEVENS and J. M. SHERWOOD, New-York. Winner of 1st prize for Two Year Old Short Horn Bulls, of the New-York State Ag. Society, at Albany, September, 1850; also winner of the 1st prize for Bulls of all Ages, two years old and over, at the Show of the American Institute, in October, 1850, at New-York.

REPORTS OF COMMITTEES.

REPORT OF THE AGRICULTURAL COMMITTEE,

ON THE EXHIBITION OF CATTLE.

The committee having charge of this department of the 23d annual exhibition of the American Institute, submit the following report:

The exhibition was held, as announced in the programme, at Madison Cottage on the 16th, 17th, and 18th days of October, 1850. The number of entries was as follows, viz: horses, 55; mules and jacks, 5; horned cattle, 127; sheep, 57; swine, 27; poultry, 33;=Total, 304. Many of the entries represented pairs of horses, mules, and oxen, and lots of sheep, swine and poultry; the whole number of animals on the ground amounted to four hundred and eighteen.

The proprietor of the cottage, Mr. Thompson, accommodated the committee with one third more ground than was occupied on former occasions, and all the arrangements, on his part, were very satisfactory.

Many of the exhibitors came from a much greater distance than we have noticed at any previous exhibition. The interest taken by them, and the general expressions of satisfaction, were highly gratifying. We have assurance that the number of entries at the next exhibition will be more than doubled provived timely notice is given, which there is much complaint of not having received hitherto. We were glad to see delegates from various States, and the counties of our own State, composed of intelligent men actively engaged in the pursuits of agriculture. The attendance of the regularly appointed judges was unusually prompt, which avoided, to a large extent, the necessity of filling up vacancies on the ground. The awards of the judges appeared to give very general satisfaction. We feel satisfied that their duties were performed promptly and impartially, for which they are entitled to the thanks of the Institute. We attach their several Reports, with such recommendations as they have thought proper to make; and we have solicited the observations of these gentlemen for publication, being confident that thereby much useful information may be annually disseminated. We would particularly call attention to a commuuication from Mr. Thomas De Voe, as containing important suggestions.

THOROUGH BRED BLOOD HORSES.

Judges: Edward Long, James Bathgate, Ray Tompkins.

William Jones, of Cold Springs, L. I., 1st prize stallion, 3 years old. Silver cup or $15.

William Jones, of Cold Spring, L. I., 1st prize mare, Young Dove. Silver cup or $15.

Lewis A. Sayre, of N. Y., 2nd prize mare, "Young Lady Lightfoot." Silver cup or $10.

Horses.

Judges: A. B. Raymond, Robert R. Morris, A. Hatfield, A. O. Houghton.

Jackson Nichols, of Flushing, L. I., 1st prize brood mare and colt. Silver cup or $10.

Bathgate Brothers, Morrisania, Westchester Co., N. Y., 2d prize mare and colt. Silver medal.

John Mc Chesney, 143 Elizabeth-street, N. Y., 1st prize Stallion, "Cassius M. Clay," 3 years. Silver cup or $10.

William H. Van Cot, N. Y., 1st prize stallion, 7½ years old. Silver cup or $15.

John McChesney, N. Y, 2d prize stallion, 5 years old. Silver cup or $10.

Thomas Williams, 1st prize colt, 2 years old. Silver medal.

Matched Horses.

R. M. Abbe, of Enfield, Conn., 1st prize pair of horses, 6 and 7 years old. Silver cup or $10.

Farm Horses.

John J. Delancey, West Farms, Westchester Co., N. Y., 1st prize pair of farm horses, 6 years old. Silver cup or $10.

Mules and Jacks.

Judges: David L. Mills, Robert Magaw, William Covert.

George Douglass, N. Y., 1st prize Jack. Silver cup or $8.

Reynolds & Weart, N. Y., 1st prize pair of mules. Silver cup or $10.

Native Stock.

Judges: Jacob D. Van Winkle, Jacob Buckhart, Charles Bathgate.

T. C. Munn, of Orange, Essex Co., N. J., 1st prize bull 2 years old. Silver cup or $15.

James Bathgate of Fordham, Westchester Co., N. Y., 1st prize cow, 6 years old. Silver cup or $10.

FULL BRED STOCK.

Short Horns.

Judges: Aaron Clement, Philadelphia, Samuel Jaques, Boston, Edward H. Smith, Long Island.

Ambrose Stevens, of N. Y., 1st prize bull, 2 years old. Silver cup or $15.

Charles H. Sly, of Little Britain, Orange Co., N. Y., 2d prize bull, 3 years old. Silver cup or $10.

Daniel B. Haight, of Washington, Duchess Co., N. Y., 1st prize yearling bull. Silver cup or $8.

Theodore Foulke, of Hell Gate, N. Y., 2d prize yearling bull. Trans. N. Y. S. Agricultural Society.

George Vail, Troy, N. Y., 1st prize bull calf. Silver medal.

John A. Pool, New Brunswick, N. J., 2d prize. Transactions American Institute.

Thomas Bell, Morrisania, Westchester Co., N. Y., 1st prize cow, Fanny, 7 years old. Silver cup or $15.

Bathgate Brothers, Morrisania, Westchester Co., N. Y., 2d prize cow, 9 years old. Silver cup or $10.

Geo. Vail, of Troy, N. Y., 3d prize cow, "Fillpail," 5 years old. Trans. N. Y. Ag. Society.

Geo. Vail, of Troy, N. Y., 1st prize heifer, "Lucilla," 20 months old. Silver cup or $8.

Thos. Bell, of Morrisania, Westchester Co., N. Y., 2d prize heifer, 1 year old. Trans. Am. Institute.

Herefords.

Judges: Horace Bailey, Robt. Bolton, Jr., John B. Burnel.

Townsend H. Sherman, of Milton, Ulster Co., N. Y., 1st prize bull, 2 years old. Silver cup or $15.

Devons.

Judges: Horace Bailey, Robt Bolton, Jr., John B. Burnell.

W. P. & C. S. Wainwright, 1st prize bull, 4 years old. Silver cup or $15.

Jacob N. Blakeslee, Watertown, Conn., 2d prize bull. $10.

Edward G. Faile, West Farms, Westchester Co., N. Y., 1st prize yearling bull. Silver cup or $8.

Ambrose Stevens, of New-York, 1st prize bull calf. Silver medal.

Ambrose Stevens, N. Y., 2d prize bull calf. Trans. Am. Ins.

Ambrose Stevens, N. Y., 1st prize cow, 3 years old. Silver cup or $15.

W. P. & C. S. Wainwright, 2d prize cow, 7 years old. Silver cup or $10.

Ambrose Stevens, N. Y., 1st prize heifer, 1 year old. Silver cup or $8.

W. P. & C. S. Wainwright, 2d prize heifer, 1 year old. Trans. Amer. Institute.

Alderney.

Judges: John Rae, William T. King, Manton, R. I., John Bathgate.

Roswell L. Colt, Paterson, N. J., 1st prize bull, 19 months old. Silver cup or $8.

Roswell L. Colt, of Paterson, N. J., 1st prize bull calf, 3 months old. Silver medal.

John A. Pool, N. Brunswick, N. J., 1st prize cow. Silver cup or $15.

Roswell L. Colt, Paterson, N. J., 2d prize cow, 3 years old. Silver cup or $10.

Roswell L. Colt, Paterson, N. J., 1st prize heifer, 1 year old. Silver cup or $8.

Roswell L. Colt, Paterson, N. J., 1st prize heifer calf, 4 months old. Silver medal.

Ayrshire.

Judges: John Rae, William T. King, Manton, R. I., John Bathgate.

Roswell L. Colt, of Paterson, N. J., 1st prize bull, 4 years old. Silver cup or $15.

Roswell L. Colt, of Paterson, N. J., 1st prize yearling bull. Silver cup or $8.

Joel Miles, of Caldwell, New Jersey, 2d prize yearling bull, 18 months old. Transactions N. Y. State Agricultural Society.

Roswell L. Colt, of Paterson, New Jersey, 1st prize bull calf, 9 months old. Silver medal.

Roswell L. Colt, of Paterson, New Jersey, 1st prize cow. Silver cup or $15.

Robert R. Morris, Westchester county, New-York, 2d prize cow, years old. Silver cup or $10.

Roswell L. Colt, of Paterson, New-Jersey, 1st prize heifer calf, 7 months old. Silver medal.

Grade Stock.

Judges: Aaron Clement, Philadelphia, Samuel Jaques, Boston, Edward H. Smith, Long Island.

George A. Prevost, of Pelham, Westchester county, N. Y., 1st prize bull, 4 years old. Silver cup or $10.

William Dobbie, of Mamaroneck, Westchester county, N. Y., 2d prize bull, 3 years old. Silver cup or $6.

Jackson Nichols, of Flushing, Long Island, 1st prize yearling bull. Silver cup or $8.

Bathgate Brothers, Morrisania, Westchester county, N. Y., 1st prize bull calf, 6 months old. Silver medal.

Robert R. Morris, Westchester county, New-York, 2d prize bull calf, Transactions American Institute.

Thomas Bell, of Morrisania, Westchester county, N. Y., 1st prize cow, 4 years old. Silver cup or $15.

James Bathgate, Fordham, Westchester county, N. Y., 2d prize cow, 4 years old. Silver cup or $10.

Thomas Richardson, of West Farms, Westchester county, N. Y., 1st prize yearling heifer. Silver cup or $8.

Thomas Bell, of Morrisania, Westchester county, N. Y., 2d prize yearling heifer. Transactions American Institute.

Bathgate Brothers, of Morrisania, Westchester county, N. Y., 1st prize heifer calf, 3 months old. Silver medal.

Milking Cows.

Judges: Henry Robinson, A. H. Hubbard, H. W. Tibbits.

James Bathgate, Fordham, Westchester county, N. Y., 1st prize cow, 8 years old. Silver cup or $15.

Robert R. Morris, Westchester county, N. Y., 2d premium cow, "Jessica." Silver cup or $10.

Bathgate Brothers, of Morrisania, Westchester county, N Y., 3d prize cow. Silver medal.

Working Oxen.

Judges: Hudson McFarlan, S. T. Wright, D. K. Skinner.

Russell S. Jacobs, of Hamden, New Haven, Connecticut, 1st prize pair working oxen. Silver cup or $15.

Fat Cattle.

Judges: Charles Gwyer, James E. Bathgate, Bryan Lawrence, Thomas F. De Voe, New-York.

John I. Coapman, Pokeepsie, New-York, 1st prize pair of fat cattle, 7 years old. $15.

Charles Hubbard, of Watertown, Connecticut, 2d prize pair fat cattle. Silver cup or $10.

Seely C. Roe, Chester, Orange county, New-York, 1st prize cow, 6 years old. Silver medal.

Thomas Bell, Morrisania, Westchester county, New-York, 2d prize cow. Transactions American Institute.

Seely C. Roe, Chester, Orange county, New-York, 1st prize heifer, 4 years old. Silver cup or $8.

Thomas Bell, of Morrisania, Westchester county, New-York, 1st prize steer. Silver cup or $8.

Steeling Bradley, Hamden, New Haven, Connecticut, 2d prize steer, 6 years old. Transactions American Institute.

Fine Wool Sheep.

Judges: John Harold, Queens county, Jacob T. J. Jones, Queens county, Obadiah Elliot, Elijahtown, New Jersey.

D. W. Catlin, of Torrington, Connecticut, 1st prize buck. Silver cup or $8.

Walter Wakeman, of North East Dutchess county, New-York, 2d prize buck. Silver medal.

D. W. Catlin, of Torrington, Connecticut, 1st prize three ewes. Silver cup or $8.

Walter Wakeman, of North East Dutchess county, 2d prize three ewes. Silver medal.

Lewis Thrall, of Torrington, Connecticut, 1st prise Spanish merino buck. Silver cup or $8.

Joseph Blakeslee, of Watertown, Connecticut, 2d prize merino buck. Silver medal.

Lewis A. Thrall, of Torrington, Connecticut, 1st prize three Spanish merino ewes. Silver cup or $8.

Joseph Blakeslee, of Watertown, Connecticut, 2d prize three merino ewes. Silver medal.

Long and middle wool Sheep.

Judges: L. D. Clift, James D. Van Vechten, John Carll.

Thomas Bell, Morrisania, Westchester Co., N. Y., 1st prize 3 ewes. Silver cup or $8.

Thomas Bell, of Morrisania, Westchester Co., N. Y., 1st prize long wool buck. Silver cup or $8.

Bathgate Brothers, of Morrisania, Westchester Co., N. Y., 2d prize Leicester buck. Silver medal.

Edward Hallock & Sons, of Milton, Ulster Co., N. Y., 1st prize 3 lambs. Silver medal.

Bathgate Brothers, Morrisania, Westchester Co., N. Y., 2d prize 3 ewes. Silver medal.

Middle Wool.

Ambrose Stevens, of N. Y., 1st prize, 3 south down ewes. Silver cup or $8.

Daniel B. Haight, of Washington, Duchess Co., N. Y., 1st prize south down buck. Silver cup or $8.

Daniel B. Haight, of Washington, Duchess Co., N. Y., 1st prize three south down lambs. Silver medal.

Ambrose Stevens, of N. Y., 2d prize 3 south down ewes. Silver medal.

Daniel B. Haight, of Washington, Duchess Co., N. Y., 2d prize south down buck. Silver medal.

Valentine Hallock, of Milton, Ulster Co., 1st prize Cotswold and Oxfordshire buck. Silver cup or $8.

Fat Sheep.

Judges: Charles Gwyer, James E. Bathgate, Bryan Lawrence, Thomas F. Devoe, New-York.

Townsend H. Sherman, of Milton, Ulster Co., N. Y., 1st prize long wool fat wether. Silver cup or $8.

Justice Haviland, of Dover, Duchess Co., 1st prize south down wether. Silver cup or $8.

SHEPHERD DOGS.

Judges: John Harold, Queens Co., Jacob S. T. Jones, Queens Co., Obadiah Elliot, Elizabethtown, N. J.

George B. Wilkinson, of Fordham, Westchester Co., N. Y., 1st prize shepherd boy. Farmers' Library.

SWINE.

Judges: Peter H. Brink, Asa B. Munn, Philip Hornback.

Samuel Brewer, of N. Y., 1st prize boar. Silver cup or $8.

Thomas Bell, of Morrisania, Westchester Co., N. Y., 2d prize boar. Trans. American Institute.

Samuel Love of N. Y., 1st prize sow. Silver cup or $8.

William Ilsley, of Macomb's dam, Westchester Co., N. Y., 2d prize sow. Trans. American Institute.

Eleazar Parmly, of Shrewsbury, N. J., 1st prize shote. Silver medal.

Samuel Love, of N. Y., 1st prize lot of pigs. Silver cup or $8.

Eleazar Parmly of Shrewsbury, N. J., 2d prize lot of pigs. Trans. American Institute.

POULTRY.

Judges: Henry C. Barretto, William L. Laing, John Dick.

A. Post, of Fishkill Landing, 1st prize lot of white turkeys. American Poulterers' Companion.

R. L. Colt, of Paterson, N. J., 1st prize pair of Bremen geese. American Poulterers' Companion.

Charles V. Faile, West Farms, Westchester Co., N. Y., 1st prize pair of mongrel geese. American Poulterers' Companion.

William Moore, of N. Y., 1st prize pair of tame geese. American Poulterers' Companion.

R. L. Colt, of Paterson, N. J., 1st prize pair of muscovy ducks. Amer. Poultry Book.

R. L. Colt. of Paterson, N. J., 1st prize pair of mongrel ducks. American Poultry Book.

R. L. Colt, of Paterson, N. J., 1st prize pair of capons. American Poultry Book.

EXTRA PREMIUMS.

The judges, in the course of their examinations, recommended the following animals as worthy of particular notice. To each a copy of the Transactions of the American Institute was subsequently awarded by the committee:

Horses.

Colt, one year old, owned by William S. Sears, of Fort Hamilton. The young Norman horse, owned by C. T. Howell of Long Island.

Matched Horses.

Those owned by A. B. Raymond, West Farms, Westchester county, New-York; also those owned by H. C. Haythorne, N. Y.

Geldings.

Horse owned by Peter Dubois, Catskill, New-York; also one owned by H. C. Haythorne, New-York.

Cattle.

The judges are of opinion that the Hungarian Cattle owned by R. L. Colt, of Paterson, New Jersey, are worthy of attention. Their appearance is tough and hardy, and they may prove good stock for crossing with other breeds.

A pair of twin heifers, owned by J. M. Ward, of Newark, N. J., well matched as to color and size, appear to be well broken to the yoke and draft, recommended more as a curiosity than utility for working purposes.

A yearling short horned bull, "Moses," owned by Charles S. Rowell, of New Rochelle, N. Y.

The small Spanish Goat, belonging to George Bolster, of N. York, appeared well broken to harness and very docile, commended as a novelty.

The Devon stock exhibited by Messrs. Wainwright and Stevens, in the opinion of the judges, was very superior, and entitle them to the thanks of the agricultural community.

Your committee, in reference to future exhibitions, beg leave to suggest,—First, that the site to be occupied should be early selected; containing four or five times the space heretofore occupied. Second, that the Board of Agriculture, be convened as early as possible, so as to complete the necessary preliminary arrangements in due season, in order that the most extensive publicity may be given to those engaged in agricultural pursuits, of all the arrangements, including the premium list. We recommend the agricultural journals as the most suitable medium through which to convey the necessary information. If exhibiters could be induced to make their entrances at an earlier date than has been usual, it would greatly facilitate the arrangements necessary for the exhibition. All those who make their entries early should have their stalls and pens numbered and ready for them. It is only by this general attention to early entrances that we can expect to prepare a catalogue, so necessary for the convenience of visitors, and so important to the interest of the exhibiters.

We recommend that, in future, the sheds and pens be built by contract, according to such plans as shall be prepared by the committee of arrangements. That the contractor be required to take, and remove the materials at the close of the exhibition, so that the Institute pay only for the labor done and the deterioration of materials.

Your committee would state, that the revision of our By-Laws, by which members of the committee were prohibited from receiving premiums, caused some of them to resign, and others did not act, so that a larger amount of duty was thrown on the remaining members than they could with convenience perform. They would acknowledge their indebtedness to Judge S. Van Wyck, Mr. Nicholas Wyckoff, and Mr. Francis Barretto, for their kind assistance, which materially aided us in conducting the exhibition to a successful close.

The increasing interest which the pursuit of agriculture is attracting throughout the country; the attention paid to it, and facilities afforded by many of our State Legislatures, seconded by an unusual zeal among the rural population in the formation of societies, and the eager pursuit of practical information, admonishes us that the era is now rapidly approaching so long contemplated by our Institution, when the husbandman shall till his fields with greatly increased intelligence, with less of toil and greater certainty of reward; consequently, with these incentives before us, we must not relax in our duty, but continue to urge forward with all our force the attainment of objects so much to be desired.

We submit a statement of the receipts and expenditures at the Cattle Show, as reported by the committee on finance.

L. G. MORRIS,
DAVID BANKS, } *Committee.*

Receipts and Expenditures at the Cattle Show.

Cost of lumber, &c.,	$362 00
Carpenters bill for erecting sheds, pens, &c.,	119 45
Auctioneer's fees for selling lumber,	7 50
Laborers for attendance,	26 38
Ropes, pails, boxes, &c.,	29 72
Clerk hire,	18 00
Corporal Thompson for refreshments,	75 00
	$638 05

Receipts.

Admission tickets first day,	$135 28
do do second day,	207 18
do do third day,	71 84
Cash from sale of lumber at the close,	213 22
	$627 52

NOTE.—The above statement does not include the value of the premiums awarded at the Cattle Show, which amounted to $729.75, or the bills of printing. The account of the Agricultural, Horticultural and Floral exhibitions will be found in the reports of the appropriate committees.

PLOUGHING AND TESTING OF PLOUGHS.

This exhibition was held at Tarrytown, Westchester County, on the 11th day of October, 1850, under the superintendence of Messrs. John G. Bergen, Peter Wyckoff, of Kings County, L. I., Tyler Fountain, of Peekskill, and A. W. Tibbetts, of White Plains, on the part of the American Institute, and Messrs. D. K. Sherwood, Elihu Leech, and Joseph Knowlton, on the part of the Westchester Co. Agricultural Society.

The above committee respectfully report, that in their judgment, as the result of the trial, Thomas Kearney, of Greenburgh, Westchester Co., (plough Mayer, Eagle F,) is entitled to the first premium. Asa B. Munn, of Orange, Essex Co., N. J., (plough, Bergen patent,) is entitled to the second premium, and Ira Peck, of Orange, Essex Co., (plough Myers' patent, Newark, N. J.,) is entitled to the third premium.

The ground selected belonged to Abraham Storms, of Tarrytown, and was admirably adapted to the purpose. The contest was spirited and exciting, and was witnessed with great interest by the spectators. Each of the ploughmen finished his one-eighth of an acre of green sward within the allotted time, (one hour,) Mr. Munn in 47 minutes, and Mr. Peck and Mr. Kearney each in fifty minutes.

The ploughing was required to be of six inches depth. All the ploughs cut from thirteen to sixteen inches furrow slice. The Mayer plough ran *true* six inches depth. Myer plough seven inches, and the Bergen plough eight inches. Several of the judges expressed a preference for the work done by the Bergen plough, on account of its depth, but the furrow not being turned quite so flat, and the ploughing, (mainly on account of the cattle,) not being as correct as that performed by the Mayer patent, they felt bound by the terms, as provided by the Institute, to make the awards as above stated.

The chairman would respectfully suggest, that for this section of country, and perhaps *any other section*, deep ploughing is most beneficial, and should be encouraged, and therefore submits that in all future trial tests, eight inches in depth should be required.

Farmers from a neighboring State, or from long distances, attending the ploughing matches, must necessarily come without teams, hence they are under the necessity of borrowing and using strange animals with which they cannot perform their work as well as they usually do with their own teams and on their own premises. It was very apparent that both Mr. Munn and Mr. Peck labored under this difficulty. The chairman would also suggest that the third premium (diploma) be changed to something else, as a volume of the Transactions of the Institute, or some other work. The award of a diploma may be invaluable to the manufacturer and others who have wares to dispose of, but to the farmer it is of little use.

Respectfully submitted,
JOHN C. BERGEN,
On behalf of the Committee

TESTING OF PLOUGHS.

The special committee from the board of managers of the 23d annual fair, to whom was referred the testing of ploughs, in connexion with the judges from the Board of Agriculture, beg leave to report, that the trial took place on the 10th of October, at Tarrytown, on ground well adapted. The draft was tested by a very good instrument, and the trial was altogether fair, each plough having been tested by the second furrow of the same plough, the following was the result:

1st,	Mayher's Eagle F.	furrow,	8 by 16,	draft 650,	wt. of	plough,	100 lbs.
2nd,	B. Myer's No. 11 Bergen,	"	8 by 16,	" 600,	"	"	135 "
3d,	B. Myer's No. 9½, N. J.,	"	8 by 16,	" 575,	"	"	118 "
4th,	B. Myer's No. 9½, N. J.,	"	6 by 12,	" 400,	"	"	118 "
5th,	Mayher Eagle D.........	"	6 by 12.	" 425,	"	"	90 "
6th,	Mayher Eagle B.........	"	6 by 12,	" 375,	"	"	75 "
7th,	John Moore, No. 19½,....	"	6 by 12,	" 320,	"	"	90 "
8th,	John Moore, No. 20,.....	"	8 by 16,	" 500,	"	"	105 "
9th,	John Moore, No. 20,....	"	6 by 12,	" 400,	"	"	105 "
10th,	B. Myer's No. 11, Bergen,	"	6 by 12,	" 400,	"	"	135 "

Respectfully submitted,
R. HALL,
J. G. BELL,
Committee.

The undersigned judges on the testing of ploughs, appointed by the Board of Agriculture, of the American Institute, report,

That we have witnessed the testing of the several ploughs, and do award as follows, viz:

John Moore, plough No. 20, furrow 16 inches wide, and eight inches deep, first premium.

Benjamin Myers, Newark, N. J., No. 9½, furrow 16 inches wide by 8 inches deep, second premium.

John Moore's No. 19½, furrow 12 inches wide and 6 inches deep, first premium.

John Mayher & Co.'s, Eagle B., furrow 12 inches wide and 6 inches deep, second premium.

D. K. SHERWOOD,
NICHOLAS WYCKOFF,
THOMPSON C. MUNN,
Judges.

REPORT ON THE SPADING MATCH.

The undersigned, a committee who were appointed to superintend the spading match held at Tarrytown, Westchester county, on the 11th day of October instant, respectfully report:

That your committee on the 11th day of October proceeded to Tarrytown, in the cars of the Hudson River rail road, which gratuitously furnished free tickets each way to such members of the committee as went from the city of New-York.

That they arrived at the village of Tarrytown in the morning of said day, and soon after 10 o'clock they met the committee appointed by the agricultural and horticultural society of Westchester county, to unite in the exhibition of the ploughing and spading matches of the American Institute to be held in that village.

That the grounds selected for the spading and ploughing matches were laid off adjacent to each other on the farm of Mr. Abraham Storms, situated on the west side of the old and main road leading from Tarrytown to Sing Sing, and north east of the railway station in the former village.

That soon after their arrival your committee was met by the president and officers of the Westchester agricultural and horticultural society, who were holding the annual fair of the society at that place.

After a polite and cordial introduction by the president to the officers and members of the society, all hands soon repaired to the grounds selected for the spading and ploughing matches.

The first thing done was to survey the ground for spading, into lots, which were laid off twenty feet long by ten wide, by actual measurement.

Six lots of ground were then staked out and numbered from 1 to 6. The whole was surrounded by an area on each side ten feet wide, laid off for a clear border, that the spaders might not be intruded upon by the spectators.

The lots were represented by six tickets marked 1 to 6, and drawn by the several competitors. But four spaders appeared, to compete for the prizes, to wit: Archibald Henderson, Joseph Mulley, Edward Peacock and Edward Griffiths.

On drawing each one for himself, lot No. 1 fell to Mr. Griffiths; lot No. 4 to Mr. Peacock; lot No. 5 to Mr. Mulley; and lot No. 6 to Mr. Henderson.

The terms and conditions of the spading match were then announced by your committee, which were as follows:

1st. The spading to be done not less than ten inches deep.

2d. The work was to be spaded for spring or garden work.

3d. The time to be occupied for spading was to be not exceeding one hour by each person.

The premiums to be awarded were then made known, and were as follows:

1st. For the best spading on the lots drawn 20 feet long and 10 wide. A prize of a silver cup or eight dollars in cash, at the winner's option.

2d. For the second best. A Silver medal.

3d. For the third best. A diploma from the American Institute.

The committee also announced at the time the spading commenced that the prizes were to be given to those who did their work the best, within the hour, and not to those who performed it in the shortest period of time, unless their work excelled the others.

The spading commenced precisely at 12 o'clock, noon. The weather was clear, with sunshine. The air cool and bracing.

At this time probably a thousand persons had appeared on the grounds to witness the performance, animated by the best of feelings.

The spaders commenced working with great spirit, cheered on by the spectators.

The grounds selected proved to be a loam mostly free from stone.

While the spading was going on a gage was held by Mr. Lock, one of your committee, who constantly passed around from spader to spader.

It was thus proved, by actual measurement, that the spading of the competitors was full ten inches deep.

Indeed it is but truth to say that most of the spading done was eleven inches deep and more.

At the end of forty-seven minutes from the time of the commencement, Mr. Griffiths had finished his spading on lot No. 1.

At the end of forty-nine minutes, Mr. Peacock declared his work finished.

At the end of fifty-five minutes and a half, Mr. Mulley declared his work completed.

At the end of fifty-eight minutes, Mr. Henderson announced his work was closed.

The spectators were highly gratified; all seemed pleased, and went away abundantly satisfied with the performance.

The committee minutely examined the ground spaded.

The committee consisted of Mr. Lenar Haight, Mr. James Lock, Messrs. David Banks, John A. Bunting, Abraham Turnure, Alanson Nash, and P. B. Mead, of the American Institute, from the city of New-York.

Dr. Underhill, president, and Mr. D. K. Sherwood, secretary of the Society of Agriculture and Horticulture of Westchester Co., Mr. W. H. Tibbets, Tyler Fountain, James G. Bergen, James Knowlton, and Elihu Leach, of the American Institute, who had charge of the ploughing match, were also present amongst the spectators, and witnessed the performance of the spading.

The committee on the spading match, after holdidg a conference on the grounds, and discussing the merits and demerits of each competitor, awarded the prizes in the following manner:

First premium, a silver cup or eight dollars in cash, at his option, to Archibald Henderson, work performed on lot No. 6 in fifty-eight minutes.

Second premium, to Edward Griffiths a silver medal, work performed on lot No. 1 in forty-seven minutes.

Third premium, to Joseph Mulley a diploma of the American Institute, work performed on lot No. 5 in fifty-five minutes and a half.

The committee unanimously recommend that a volume of the Transactions of the American Institute, for the year 1849, should be given to Edward Peacock, who finished his work on lot No. 4 in forty-nine minutes.

This recommendation was made in consideration that Mr. Peacock had performed his work to the entire satisfaction of all members of the committee. The difference between his work and that of Mr. Mulley being small indeed.

The committee are happy to report to the Institute that they found at Tarrytown, a numerous assembly of ladies and gentlemen attending the Fair of the Society of Agriculture and Horticulture of Westchester county, many of whom were drawn there to witness the ploughing and spading matches. All seemed animated with a right spirit towards Agriculture, Horticulture, Manufactures and the Arts.

Many ladies came on the grounds to witness the ploughing and spading matches. They were welcomed by all, and treated with the delicacy and deference due their sex. Their presence produced a happy influence upon all present.

Numerous gentlemen were in attendance from distant parts of Westchester, Rockland, and other counties in this State; also, from New Jersey, New-York City and from Connecticut. Nothing occurred to mar the happy performances and exhibitions of the day.

The committee feel proud to announce that no rude or immoral behavior, from any person, was seen upon the grounds. Sobriety and temperance reigned supreme. All things were well done and conducted with decency and in order.

All of which is respectfully submitted,

DAVID BANKS,
ABM. TURNURE,
JOHN A. BUNTING,
ALANSON NASH.

New-York, October 19th, 1850.

HORTICULTURAL REPORT

OF THE

Twenty-third Annual Fair of The American Institute.

Among the events of the past year which have impressed the public mind for good, a prominent place may be given to the Twenty-third Annual Fair of the American Institute. This, as a whole, was pronounced by competent judges to be the best yet held, and the receipts prove it to have been the most largely attended. This affords evidence of that steady advancement which I have remarked upon in former reports, and cannot fail to be a matter of deep gratification to all who take an interest in the progress of American industry and skill.

The Horticultural department, as usual, was well represented by a most gratifying display of Agricultural Products, Fruits, Vegetables, and Flowers. Among Agricultural Products, *Corn* and *Wheat* were the articles chiefly remarkable for quantity and quality, samples from which were selected for exhibition at the Great World's Fair in London. The display of corn was much larger and finer than any that I have yet seen, and suffered no little damage from pilferers. With the exception of an unusually fine sample of Rye, the remaining Agricultural Products were much the same as at our last Annual Fair, and require no further remark.

In the articles of *Flour* and *Meal* there was a very spirited competition, and a much larger number of exhibiters than at any preceding Fair. Several samples had been prepared with great labor and care expressly for competition, and were of unsurpassable quality. I must here state that some dissatisfaction has been expressed at our mode of awarding premiums for flour, and it seems to me, on reflection, with some show of justice. For example, we offer a cup for the best barrel of flour. A single barrel is prepared with unusual care, and repeatedly bolted, making it too expensive to offer for sale in the market. I doubt whether it would pay to sell it for less than $15 or $20 a barrel. Now what the public want to know is, not how fine flour can be made by a series of expensive manipulations, but who sends the best brand to market; and the only way to ascertain this is to offer a premium for the best barrel of flour, which shall be a fair sample of that usually sent to market. I ought here to state, that this subject has occupied the attention of the Board of Agriculture, but we have not yet succeeded in meeting the difficulties of the case. I think I can safely add, that in the course of another year all cause of complaint will be entirely removed. There was also an unusually large display of *Farina* and *Prepared Flour*, the latter of which we had no means at the time of examining; but I have since had opportunity of having it tested, and it was found to be a superior article, and well adapted to its purpose.

Of *Vegetables* we had a very fine display; in some particulars even better than that of last year. Among the numerous samples of *Potatoes*, there were several lots of fine seedlings, one exhibiter having presented some half dozen samples, nearly all of which were of superior quality. The potato rot has had the effect of turning attention to the raising of seedlings, from which some good results may be expected to follow. Of *Cabbages*, *Beets*, *Carrots*, *Turnips*, *Onions*, *Celery*, and other vegetables of the season, the display was uncommonly good, and reflected much credit on the exhibiters. The show of *Cattle Roots* was particularly fine. Their importance is getting to be pretty well understood, and their culture will increase with the spread of agricultural knowledge. I noticed this year a greater number of large exhibiters than has been usual with us, which no doubt was owing in great measure to a new feature in our premium list, presenting a larger field for competition.

Of what may be called *Miscellaneous Articles*, there was almost an endless variety; to notice them here in detail, would take up more space than could be spared to them: some were curious, some pretty, and some by no means unimportant. For example, beautiful specimens of *Galvanized Fruit*, vases of *Wax Flowers*, *Flower Stands*, *Garden Syringes*, *Chestnuts* without burs, *Preserved Fruit*, *Brandy Peaches*, *Sauces*, French *Bur Pickles*, *Mustard*, *Maple Sugar*, *Native Wines*, *Bee-houses*, *Honey*, &c., &c. The honey I had intended to notice somewhat in detail, as well as a patent bee-house, and a new method of feeding bees on artificial food; but the notes which I made for the purpose have been mislaid, and I deem it unsafe to trust to my memory alone. I recollect, however, that the bee-house struck me as being a most admirable contrivance, and seemed every way to answer the purpose for which it was designed. There were niches for glass jars and tumblers, which could be readily removed when filled, and replaced by others. The bees could be driven from one part of the house to another at pleasure, and in all particulars could be managed with the utmost ease. The honey made from this artificial food was of three distinct qualities, according to the composition of the food; and the best was really a first-rate article.

The display of *Fruit* was not so large as that of last year, as a whole. This is to be attributed to two distinct causes: first, the failure of crops; second, the meeting of the Congress of Fruit Growers at Cincinnati during our Fair, which had the effect of drawing off a number of our large exhibiters, particularly those at the west. The crop of *Native Grapes* was almost an entire failure, caused by severe gales of winds in the early part of the season and later, which broke the vines badly, and either tore off the leaves, or lacerated them in such a way as to render them unfit to perform their functions; the grapes consequently either ripening prematurely and imperfectly, or drying up and dropping off altogether, as was to have been expected. This fact, in my opinion, is a strong argument, if any were needed, against the foolish practice of pruning off the leaves of a vine in order to ripen the grapes. Experience has convinced me that the loss of grapes will be in proportion to the loss of leaves; and this seems to me perfectly natural. I have seen it tried time and again with precisely the same results. Notwithstanding these drawbacks, we had some samples of native grapes of extraordinary size and fine flavor. I ought here, in justice to Dr. Underhill and others, to state that, under our new By-laws, no member of a Premium Committee can receive an award. This explanation will account for their names not appearing on the list of awards, and save me from the charge of unfairness. Of *Foreign Grapes*, the display was fully equal in some respects, and superior in others, to the splendid show of last year; quite equal in quality and size, and larger in quantity. The culture of foreign grapes under glass is exciting more attention than ever before, and every year increases the number of growers. This is all right and proper, and a source of gratification, at least to me; but still our chief dependence for general consumption must be on our own native grapes, of which we now have several choice varieties, and I have no doubt that, by hybridizing and high culture, we can in time produce some quite equal to the best foreign grapes now grown.

Of *Peaches*, I have the pleasure of saying that we had a much larger and finer display than has ever before been seen at any Fair of the American Institute. This may be owing in part to the number of late peaches which have recently been brought into culture, which enables us to have this most luscious fruit in perfection as late as the third week in October. These peaches were not small, shriveled, and insipid specimens, but large, plump, juicy, and luscious as one could desire. Of *Apples*, *Pears*, *Quinces*, and other fruits, the display was very creditable, though not unusually large. I would here remark, that often large quantities of superior fruit come in after the judges have been round, and thus it sometimes happens that the best fruit does not get the highest award, to which it would be entitled if it were sent in at an earlier hour. In many cases this neglect is owing to misapprehension, and is, therefore, the more to be regretted; but in a few instances I have good reason to know that owners of fruit have delayed sending in their specimens till they have had an opportunity of seeing whether they could "beat every body;" they come in so late, however, that they generally get what they deserve—just nothing.

The *Flowers* next demand attention. The display of these lovely objects was very large and truly magnificent. We have never before had so many large exhibiters of flowers; as evidence of which I will mention that some three or four had on exhibition during the whole four weeks of the Fair, over *five hundred* Dahlia blooms, all of which were renewed at least three times a week. The competition in Dahlias at our special exhibition was very spirited, and, owing to the large number of competitors, and the nearly equal merits of several of the stands, the judges were sorely puzzled in rendering a decision. Improvements are yearly being made in this elegant flower, and at every succeeding exhibition new names and more beautiful forms greet the eye; and among these, on the present occasion, were several superb American seedlings.

The show of *Roses* was exceedingly large and splendid. Of this loveliest of flowers, there were several American seedlings of great beauty, as respects both color and form. The special exhibition brought out a large number of charming specimens, which attracted a great deal of attention, particularly from the ladies, among whom the rose is a special favorite; and who loves it not? I must next call attention to a very large and splendid display of *Bouquets*, much the largest and finest that I have yet seen. It is worthy of mention that several ladies were competitors here, and they entered the field of competition with a spirit that did them infinite credit. Some of them exhibited nearly *thirty* bouquets each! I could have wished that *all* the ladies had come off first best; but, owing to a want of gallantry or something else on the part of the judges, only one of them attained this enviable distinction. The display of *Ornamental Designs* was not equal to that of last year, though there were some of considerable beauty. Some seem to think that a design is beautiful in proportion to the number of flowers crowded upon it; but it seems to me that, even with fewer flowers, its beauty is greatly enhanced when some *idea* is shadowed forth in its form and conception. These things involve much labor and expense, and few are willing to incur either for the small premium that we feel able to give. Some, however, seem commendably ready to constitute themselves judges of their own articles, particularly in the matter of ornamental designs. I must also notice several very beautiful *Baskets of Flowers*, most tastefully arranged. It seems to me that this is by far the most effective way of displaying flowers, as it presents facilities for combining color and form afforded by no other mode. In conclusion I must pass over a number of pretty things with a bare mention of their names, such as *Passifloras*, *Aristolochias*, *Salvias*, *Pansies*, &c., &c.

I have thus endeavored briefly to give some idea of the more important articles exhibited in the Horticultural Department. To notice every thing, would be impossible, and, even if possible, would not be desirable. The subject of agriculture, in its widest sense, is one of great importance, and naturally suggests many thoughts to the reflecting mind; indeed, I am not sure that it is not the most important subject, in an economical point of view, which can occupy the attention of mankind. It is the most important, because all others are in a peculiar manner dependent upon it. This is so self-evident on reflection, that no sane man will pretend to deny it. Is it not, then, a fit subject for study and experiment? And yet how few of us have studied it as it should be studied. It is a remarkable fact, that things the most abstruse and recondite, the farthest possible removed from the real wants and necessities of mankind, have occupied the deepest thoughts and most profound research of the best talent the world has ever produced; while those things which are nearest to us, by which we really "live, and move, and have our being," and which so deeply concern our very existence, have been comparatively neglected since the day when Adam first "tilled the ground by the sweat of his brow." So prone are we to neglect vital interests for those which concern us remotely, if at all.

But a better state of things is beginning to dawn upon us; and for this we are indebted in great measure to associations like the American Institute. I had thought that the age of progress and discovery began some time since, but it would seem that we are now only on the threshold of it. What a scene do we behold! Discoveries the most startling are announced, which, *if* true, will revolutionize the world, annihilate space, give us a universal motive power, and light the world for almost less than nothing! The minds of men seem all at once inspired with ceaseless activity, and a scene is presented such as was never before seen.

Let us hope that some good may come of all this. I am one of the hopeful ones; and in this mood I perceive some reason to *hope* that the present Legislature of New York will pass a bill incorporating an Agricultural College; but whether such a college as the wants of the country demand, remains to be seen. I confess that I am not so hopeful on this point; but let us have the best we can get. Among the thousands of dollars yearly appropriated for educational purposes, something might well be spared for the interests of agriculture, the study of which, in my humble opinion, is quite as important as that of many branches of knowledge pursued at colleges and schools. Virgil complains that while all the other arts and sciences are made the subjects of regular study, that of agriculture is entirely neglected at schools; and this complaint still remains a reproach to nearly all educational institutions the world over. Of the several studies which now go to make up what is called a finished education, some are entirely useless in after life, and others of doubtful utility. For some one of these, the study of agriculture might well be substituted. I mean agriculture in the widest sense of the word, practically and scientifically, including at least the collateral sciences of botany, geology, and chemistry.

But simply an Agricultural College will not answer the purpose; we must also have with it an *Experimental Farm.* It will by no means answer to study agriculture as we do the dead languages. A mere *theory* of agriculture will be useless for all practical purposes. To be of the least utility, agriculture must be practiced as well as studied; its votaries must be *workers* as well as *readers*. This has its peculiar advantages; advantages which no other study presents; for while it invigorates the physical powers, gives strength to the body, and makes man more manly, it at the same time imparts elasticity, energy, and vivacity to the mind, and thus the physical and intellectual powers are mutually developed, the one strengthened by the other. This is very much nearer to a perfect education than any system now practiced; for though it can not be said to educate the moral powers directly, it will indirectly exercise a very powerful influence over them.

But an Agricultural College, even with an experimental farm, will be in danger of doing more harm than good if placed in the hands of improper and incompetent persons. Thus it will be seen that the subject is not without its difficulties; but, by the exercise of an ordinary degree of foresight, discretion, and wisdom, these will soon vanish. Men of the right kind can surely be found to take charge of the various departments; men both able and willing to carry out in good faith, the great objects contemplated in founding such an institution. Such men we already have among us.

An Agricultural College will unquestionably be a great public good; but shall we stop at a single institution of this kind? By no means. I would have a grand system of Agricultural Colleges and experimental farms; one in every State of the Union. The peculiar advantages of such a system must be apparent to all, without the necessity of going into detail, which my limited space forbids. A grand series of experiments could thus be made over a vast extent of territory and in a great variety of climate, the results of which should be carefully noted. To make these results available to the public, a periodical should be established devoted exclusively to the interests of these colleges, and through this medium a vast amount of useful and reliable information could be spread over the length and breadth of our land. As a matter of course, there would be lecturers and a series of lectures. These lecturers, who should be practical men, might at intervals visit different localities, and *talk* with (not declaim to) the farmers and others, about those subjects relating to the interests of agriculture. Oral instruction imparted in this way will be found to take root and yield fruit, where knowledge communicated in the usual manner will die in the seed leaf.

Again, the principal officers of these colleges should be constituted a grand central committee, at whose periodical meetings an interchange of opinions and comparison of results might be made with mutual advantage. Still further, there should be attached to each college a range of glazed houses for growing rare and tender plants, which would be of the first importance to classes in botany, and which would also subserve other important purposes.

Lastly, there should be a grand system of *fairs*, for every thing should be grand here. These might be held either in some central locality, or in each of the States successively. All the colleges would be contributors to these fairs, and the emulation of the students should be stimulated by suitable awards. These fairs would attract thousands of visitors from all parts of the country, who would cheerfully pay a fair price of admission. The receipts no doubt would be large; and the surplus remaining after paying expenses might go to the support of the colleges. I suppose that in this way they might very materially increase the sphere of their usefulness, and give a healthy stimulus to this most important branch of productive industry. A system of Agricultural Colleges like that here shadowed forth would form the nucleus of so many *botanic gardens*, which form a striking feature in the public policy of some European nations, but of which this prosperous and enlightened nation can not boast even an apology.

There are some who treat this whole subject with a sneer; men full of *poohs!* and *pshaws!* and curling lips. Poor, deluded souls! they have yet to learn that a sneer is a sorry sort of argument even among very stupid people. There are others who admit all the importance of an Agricultural College, who yet deem it useless to make any continued effort to obtain it, simply because Legislators, (heaven save the mark!) being mostly occupied with objects more nearly relating to their own personal interests, either do not or will not perceive its utility. This, it seems to me, would be a rather unsafe basis of action, (or rather inaction,) in any important transaction of life. If these men are really desirous of seeking the right path, should we not do what we can to put them in the way of finding it? If, on the contrary, from blindness, stupidity, perverseness, or any other cause, they prefer to grope their way in the dark, should we, for this reason, withhold the light from them? Certainly not. If a certain set of men, possessing the requisite power, refuse, no matter from what motive, all encouragement to one of the most vital interests of the country, one, too, that is productive of the greatest amount of independence, comfort, and happiness to the people, shall we, therefore, be content to hold our peace and let the subject die? I, for one, will not. No; let us keep it continually before the public mind; let us throw all the light we can on it; and after prejudice shall have been somewhat smoothed away, we shall doubtless obtain what we need and desire.

Why is it that many legislators so eagerly stretch forth their hands to protect the interests of manufactures? Is it not because they bring sudden riches? And why is it that the interests of agriculture receive so little encouragement from the same hands? Is it not because it enriches but slowly? Dollars and cents, then, are the measure of protection and encouragement. Very well. Agriculture has claims even here. But are these all? Are there not some other weighty things besides dollars and cents? Are the happiness, contentment, and comfort of a people of no account? It would seem not. How long are we to suffer the evil consequences of the short-sightedness of these "blind leaders of the blind?" Will these men never be made to see that it is agriculture which furnishes them the means to make dollars and cents, and this, too, notwithstanding their neglect of it? How much more, then, if it received that encouragement which it deserves? Had nature been less bountiful, the case had been far otherwise. I do not wish to be understood as placing agriculture and manufactures on antagonistic ground; not at all. But which makes the happiest people? Let the history and experience of the world in all ages answer. Let us look at the results in an *exclusively* manufacturing nation, or nearly so. Here we have sudden and great riches, in one portion of the people, but accompanied by luxury, pride, effeminacy, dissoluteness, degeneration, and other kindred evils; while in another portion we see want, poverty, moral and physical decrepitude, crime, and a long list of evils which make the heart sick to contemplate. This is what we see when the element of agriculture is left out of the account; and this, be it remembered, is no fancy sketch. Agriculture, on the other hand, enriches but slowly, but its accompaniments are, plenty, independence, ease, comfort, sobriety, health, contentment, happiness, and many other real blessings, which no other pursuit ever can afford in like degree.

Either leave both manufactures and agriculture to take care of themselves, or extend to both the same kind and degree of encouragement. They are intimately related, and can be made to *work* for each other in a way that will promote the interests of both, and consequently increase the prosperity of the country, as well as lessen the evils just named. Let them move on, then, hand in hand. To build up manufactures at the expense of agriculture is a suicidal policy, to say the least of it, and only worthy of a dark and despotic age. Something will have to be done for agriculture ere long by somebody ; a stern necessity will demand it in a voice that will make itself heard. Our old lands are wearing out fast by a wretched system of culture, and even the virgin soil of the west will not last forever. Let this fact be borne in mind.

And here I would ask why botany is not a very proper study for young ladies ; and what should prevent them from acquiring some knowledge of mineralogy and entomology at the same time? How many listless hours *some* young ladies might be spared if they possessed only a slight knowledge of these delightful sciences. How many things, which are now looked upon with little or no interest, might be made instinct with gratification. Every school house should have a garden spot attached to it, and an hour or so each day allotted to its culture. Besides the mental and physical advantages peculiar to itself, such a course would fit the pupils to give their minds to their studies with renewed energies. These things must be made a part of our common school education, even if the dancing master has to be kicked out of doors after the most approved manner of doing such honors, which, in my humble opinion, the modern specimen ought to be under any circumstances. Nature is a much better teacher than he.

To be brief, we must, in addition to all this, use all our endeavors to effect a wider diffusion of the taste for flowers. Every house should have its garden spot, which should be tastefully laid out with the choicest kinds of flowering plants, dwarf fruits, grape vines, and evergreens, and kept in the neatest order. A good deal of experience and observation has convinced me that neatness and order in a flower garden do much to produce a corresponding order of things through the whole household. In addition to the flower garden, there should be a conservatory or glazed piazza, stocked with the choicest winter-flowering plants; and when the conveniences for these do not exist, a few plants should be kept in the parlor. Some may object to the time, labor, dirt, &c., but these, I can state from experience, are mostly imaginary, and are greatly overbalanced by the benefits and pleasure derived from the culture of these beautiful gems.

Most people take pride in making their homes look elegant and showy, and many, for this purpose, spend enormous sums for tapestry, damasks, tinsel, and a great variety of gewgaws in wretched bad taste. A part of the money thus spent, judiciously laid out in the purchase of choice flowers, would give greater evidence of refinement and taste, and render their homes every way more elegant, neat, and attractive. This state of things I have been laboring for years past to bring about, and the great success I have met with not only encourages me to go on, but gives me reason to believe that the day will come when the presence and love of these charming objects will make "home" so attractive and lovely that its inmates, instead of roaming abroad to seek pleasure and amusement, will find their chief delight within the precincts of the domestic circle.

In conclusion, I will add my best wishes for the continued prosperity of the American Institute, and the important interests intrusted to its protection and care.

All of which is respectfully submitted.

PETER B. MEAD,

Chairman of Horticultural Committee.

FAT CATTLE.

To the Committee on Agriculture:

Gentlemen,—As one of your judges on fat cattle at the late exhibition, allow me to say, that I had the pleasure of passing judgment on the fat ox (steer) exhibited by Mr. Thomas Bell, at the last State Fair held at Albany, coupled with another (since dead) which had been fattened with him. I feel called upon to say that I considered the one last mentioned as one of the finest animals, in every sense of the word, that ever came under my notice. He was raised by the Hon. Henry Clay, of Kentucky, and fattened by James S. Wadsworth, Esq., Geneseo, Livingston co., N. York. The ox was about three parts Durham, and one of southern native, roan color, weight 2,247 pounds, at the State Fair. His points were all full; back and hips very broad, almost a straight line from the tail to the tip of the horns, which were also straight and small, legs short and small, and to the eye of the butcher, he was almost perfection. I understand Mr. Bell purchased the pair of Mr. Wadsworth for the purpose of still further feeding and exhibiting them at the Fair of the American Institute. Unfortunately, one of them (alluded to above) sickened and died about three weeks before that exhibition; which I consider not only a severe loss to Mr. Bell, but a great disappointment to those who take an interest in fine cattle. Nearly 700 pounds of fat was taken from the body, showing that he was an extraordinary animal. His mate was examined by many good judges, butchers and drovers, at the Fair of the Institute, and pronounced by them, taking every point into consideration, the best they ever saw, and they could hardly believe the one that died was his superior. He had the advantage, however, across the shoulders and rump, was rather fatter, and we gave him the first premium, and his mate the second, at the State Fair.

I will here add a few remarks on fat cattle, which, to some extent, may prove beneficial to the farmer, breeder, feeder, and butcher. Animals that are close made, active, full in all the points, rather small head and neck, broad shoulders, hips and rump, and not a large fat brisket, are always to be preferred. To the farmer, when he is thin, he is a worker and an easy keeper. For the breeder, he is a ready sale, at high prices. For the feeder, he fats easy, weighs heavy, sells quicker, and commands a better price. And to the butcher, he affords more prime parts, the grain of the meat is finer, cuts richly marbled, smaller bone, and, best of all, affords plenty of inside kidney and rough fat. Such an animal will fatten on about half the feed that it will take to keep an open coarse made one; and when the coarse animal is fattened, he is objectionable on account of the quantity of coarse meat and bone, compared with his prime parts, and never brings so good a price. In the few examinations I have had the pleasure to attend, my attention has been drawn to the kind of breed that will bring this sort of cattle. Generally it has been about half Durham with good large natives of the place where fattened, They appear to have done better, as it were, on their own barn yards, than they would have done had they been strangers.

I do not know that the following questions are important, but they frequently arise in conversation and otherwise. As a difference of understanding prevails, it might be well to have them definitely settled, viz: At what age shall a steer be called an ox? A heifer, a cow? And at what age shall a calf cease to be called a calf? There may be some settled point on these subjects, but I have never yet come across it.

My own impression is that a steer ceases to be a steer after he passes the age of four years; because he is then fully developed, and generally yoked and worked before that time, which soon gives him the ox appearances. And a heifer, after she has had a calf, ceases to be a heifer, and becomes a cow, unless she has been spayed, or on arriving at the age of six years and upwards, proves barren; she is then called a free-martin, or barren cow. The calf, when it passes one year, should, I think, be called a yearling steer or heifer. Some are of opinion that it should cease to be called a calf when it ceases to suckle; but that period is various; I have known calves to suckle 21 months.

Allow me to suggest to the Institute the propriety of offering annually a premium on fat calves, say from four to ten weeks old; at that season they would find ready purchasers on the ground at good prices. And also some additional premiums on fat cattle and sheep; say for the best fat steer from three to four years old, and from two to three years old. Then for the best fat wethers and ewes of various breeds, and also for the second best. If the premiums were small, the exhibitors would be better satisfied, and it would produce a larger show.

Yours, respectfully,
THOS. F. DEVOE, Butcher,
8 Jefferson Market.

New-York, Oct. 18, 1850.

ON DRIVING CATTLE.

It was perceived at an early period in the history of the West, that Illinois furnished facilities for raising cattle superior to almost any other region in the States. And it is now coming to be realized that no inconsiderable portion of the neat cattle required for the markets on the sea board from Georgia to Maine, come from that State; the prairies and bottom lands of which, furnish exhaustless stores of feed; and it is said cattle fatten through most of the winter, on the pea-vine, buffalo-grass, wild oats, rushes, &c.

Stock cattle from Illinois have been driven into Lancaster, Chester, and York counties, Pennsylvania, for about 17 years, where they were fatted for the Philadelphia, New-York, and Boston markets. Ohio and Indiana furnished these markets at an earlier period. It is about ten years only, since the first fat cattle were driven from Illinois direct to the markets on the sea board. Now that State furnishes from 15,000 to 20,000 head of fat cattle per annum, direct to the markets from Baltimore to Boston.

Experienced drovers inform us, that droves of cattle should never exceed 120 or 130 in number, and each drove requires the constant attention of three men on the road. Unless compelled, they should never be driven over eight miles per day, and it is of the utmost importance that they be fed twice in each 24 hours while on the road. Droves from Illinois to Boston, which have been three and a half months on the road, arrived without the least deterioration.

In preparing for departure with a drove of cattle, one of the most gentle and least valuable of them is selected as a leader, and this animal is led through the whole route by a rope attached to his horns. The leader at the start, is put at the slowest possible gait, and kept at that during the progress of the journey. It is remarkable with what facility the whole drove will take the gait of the leader and continue it. Each man is furnished with a whip, which he snaps, but seldom, if ever strikes an animal.

Droves which are started in Illinois from the first to the fifteenth of May, can depend on grass during the whole journey; but it is not to be depended on if started at a later period.

The cost of driving cattle from Illinois to Massachusetts on grass, averages $9 per head; and to Philadelphia and New-York $7. If they are kept on feed it will cost from $12 to $20. Drovers have not as yet adopted the services of the dog, but the prevailing opinion among them is, that it may be done with very decided advantage. Cattle which are worth from $30 to $45 per head in Illinois, bring on an average about $70 in the Atlantic markets. In Boston they are sold at so much per 100 wt. weighed alive, deducting such per centage as may be agreed on. In New-York they are sold on the leg by bargain. In Philadelphia both ways. In Baltimore they weigh and sink one half. Cattle very seldom get sick on the road. Sometimes they become lame from travel on bad roads, but by careful shoeing and slight indulgence they soon recover.

There is still in Illinois a remnant of the old French stock, but they bear no comparison to the improved breeds which are rapidly being introduced. The short horns and Devons are becoming very numerous. At pressent cattle from Missouri and other portions of the south and west rendezvous in Illinois, where they are fatted for the eastern markets.

We have stated the cost of driving from Illinois to Massachusetts, at $9, and to Philadelphia and New-York at $7. But this must be considered as being under the most favorable circumstances of grass, good roads and pleasant weather. The average cost of driving may be fairly estimated at $16 per head; in addition to which there may be calculated an average loss or shrinkage equal to twelve pounds per head.

It is now conceded that the transportation of cattle by water, or on railroads, is both cheapest and best, provided suitable arrangements on the railroads are made for that purpose. The result of the present arrangement is a cramping of the muscles of the animals, and consequently a deterioration. An experienced drover informed us that a drove of 110 under his care were kept on the cars fifty-two hours; the drove suffered a deterioration of $1,000 in value. In this case, however there was a collision of two trains, which to a large extent may account for the loss, as two of the animals were killed by the violence of the shock.

In the summer of 1850, there were two droves started from Illinois. One travelled the whole distance on foot, excepting 300 miles on railroad. They were 78 days on the road, and kept on dry feed. The cost of their transportation averaged fifteen and a half dollars per head, and they diminished in weight from 70 to 75 pounds each. The other drove, consisting of 100 head, came via Chicago by water to Buffalo, thence by railroad to Albany, and down the Hudson to New-York on barges. The time consumed in transportation was eight days, and they came in without deterioration at a cost of thirteen dollars per head.

A. CHANDLER.

WINE FROM THE CATAWBA GRAPE.

Mr. L. Rehfuss, of Cincinnati, presented two samples of wine of the vintage of 1848, manufactured by himself. The Catawba, it is believed, in that year came to its most perfect maturity.

The grapes from which specimen No. 1. was made, had laid two months on straw, with a view of enriching their saccharine matter; the grapes were then run through a pair of wooden cylinders to crack the berries, and the liquid or must that run off showed a specific gravity of 1,102, or 102 grades on the wine-must scale. The wine fermented on the hulls about twenty-four hours, which gave it its reddish color. The clear must was then run off from the hulls and fermented in closed barrels, not entirely filled, by running a tin tube through an air-tight set bung, one end of the tube being six or eight inches from the fermenting must, and the other end terminating in a vessel of water, through which the carbonic gas escapes. Wine prepared in this way in Germany is called Straw wine, and is highly prized.

Specimen No. 2. The grapes were run through the grape-mill, immediately after cutting, and the first run of must separated from the pressings in order to obtain a wine free from astringency. The fermentation was carried on in closed vessels. The must showed a specific gravity of 1,095, or 95 grades on the must scale; and after fermentation a specific gravity of 0,992. Wine No. 2. was more palatable than No. 1, in consequence of not having fermented on the hulls; but No. 1. requires two more years to bring its full boquet out. No sugar or brandy was added to either specimen. We annex the report of the judges:

A. C.

Castle Garden, October 23, 1850.

The committee on wine have examined the samples of the vintage of 1848, made by Mr. L. Rehfuss, of Cincinnati, Ohio, from the Catawba grape, and have found it wine of good quality, and with suitable age and full maturity promises to be of very fine quality.

CHARLES H. HALL,
EDWARD BOKER,
WILLIAM NIBLO,
GILBERT DAVIS,
Committee.

HORTICULTURE IN SAN FRANCISCO.

The following letters were duly received at the American Institute during its 23d annual Fair. We regret to say that the vegetables alluded to have not been received. At this time, when there is a very general inquiry relative to the productiveness of the soil in this new and highly interesting portion of the Union, it seems proper that any reliable information on that subject should be placed before the public:

A. C.

San Francisco, California, Aug. 31, 1850.

Secretary of the American Institute:

My Dear Sir—I enclose a letter from H. Toler, Esq., one of our citizens, whose garden, during the season, has been an object of great attraction, being in the heart of the town and on one of the most public streets.

The box, alluded to by Mr. Toler, was forwarded this day per steamer Oregon for Panama, which we hope will reach you in time for the approaching exhibition; it is directed to the American Institute, city of New-York. We do not expect the sample of turnips sent will rival all others, but serve to show, that even in San Francisco, where those who have never seen it, imagine nothing can grow, or scarce exist, vegetables can flourish, and without irrigation.

I am, respectfully, yours,

C. L. ROSS.

San Francisco, California, Aug. 31, 1850.

To C. L. Ross, Esq.:

My Dear Sir—I cheerfully adopt the suggestion contained in your note just received, and send you some of the turnips grown in my vegetable garden, in the heart of this city, that they may be presented to the American Institute at their approaching exhibition, as a small specimen of the luxuriant growth of the soil of California.

It is to be regretted so much time has elapsed since these turnips came to maturity that they have become corky, and hence, although one of them is two feet nine inches in circumference, it now weighs only eight pounds, whereas it would probably have weighed in its vigor sixteen or seventeen pounds. Nearly three months ago, I furnished Mr. W. H. Parker, the excellent caterer and proprietor of the fashionable hotel, St. Francis, a turnip that was three feet in circumference and weighed eighteen pounds, to be served up whole in the ladies ordinary; and subsequently, I supplied the keepers of the restaurant in Kearney street, with two turnips that weighed twenty pounds each.

It may be satisfactory to state, that the seed was brought directly from England, and was represented to me to be of the white, flat, Dutch sort. The turnips were grown without irrigation, and without being moistened by rain, as the seed germinated at the close of the rainy season.

I have lately been told by Gen. Vallejo, that he has heretofore seen many such specimens of the turnip family. I cannot, therefore, claim any merit for producing these in my garden, which is composed throughout of a black, fertile soil, of a depth of two feet. The wonderful fruitfulness of the soil in California, needs nothing from me to enlarge the interest already so generally taken in horticultural pursuits in this State. It is rapidly extending from one end of the country to the other.

I am, respectfully, your ob't. serv't.,

H. TOLER.

POTATO ROT.

Mr. A. O. Houghton, of Rahway, N. J., with whom we have been acquainted several years, assures us that he has preserved his crop of potatoes, or a large portion of them, for five years past, by the following process: As soon as the appearance of disease presents itself in the top, he immediately pulls the tops of the entire field and leaves them upon the surface, pressing down the tubers that may show themselves with the foot. On digging his potatoes at the proper time, he has uniformly found them sound, and they have kept as well as the crops of former years.

It is a remarkable fact, which he noticed each year, that in going over the field in the process of pulling, there would occasionally be a hill missed and the top left standing. It was uniformly found, when the time of digging came, that where the tops were thus left there were no potatoes found.

A. C.

STRAWBERRIES AND OTHER SMALL FRUITS.

Mr. John H. Brinckerhoff presented at the rooms of the Institute in June last, a basket of strawberries containing about two quarts, which were raised by him at Hackensack, N. Jersey. They were of the variety called Scotch Runners, measuring on the average four inches in circumference, of excellent flavor, selected from a field of less than one and a half acres. Mr. B. informed us that he commenced picking on the 21st of June and discontinued on the 7th of July, picking the field every other day; each picking yielded from 1,000 to 1,900 baskets, of three gills each. The cost of picking was one cent per basket.

Assuming the crop of Mr. Brinckerhoff to average 1,500 baskets at each picking, which, repeated eight times, gives us 12,000 baskets. Now if the crop would average berries one-half the size of the specimen presented at the Institute, in baskets of the size described, they would nett 10 cents per basket, or $1,200 for the whole crop. Putting them at the lowest market price, say 4 cents per basket, the crop would produce $480.

The cultivation of the small fruits in the vicinity of our cities has always proved a profitable employment of the land, particularly where attention has been paid to a selection of the best varieties, and their careful cultivation. The product of an acre, in many instances which have come to our knowledge, has been truly astonishing. There is an endless demand for these fruits in our markets, and the choice varieties, which are as easily cultivated as those of an inferior sort, always command large prices.

A few acres devoted to the cultivation of the small fruits, is an occupation worthy of attention. Good judgment must be exercised in the selection, coupled with the requisite intelligence in regard to their culture. Getting these products to market in good order is of great importance, and it is really cheaper to bring them in good order than otherwise. The quantity named by Mr. Brinckerhoff, three gills, is as much as should be kept together, either of strawberries, raspberries, or blackberries; and baskets containing this quantity is preferable to any other method of preparing them for market; the fruit can thus be kept cooler, and there is less liability to ferment.

The diseases which make their appearance annually in our cities during the season of fruits, such as cholera-morbus and other bowel complaints, are generally attributed to unripe fruits, particularly among children. But I apprehend they may, with greater propriety, be attributed to small fruits in a state of fermentation, than to any other cause. The quantity in this condition which is found in our markets, is by no means small, and much of it undoubtedly finds purchasers.

Of the small fruits worthy the attention of cultivators, we would name strawberries, raspberries, blackberries, currants, gooseberries, cherries and cranberries. The latter, it is well known, is capable of cultivation upon upland, producing crops of from 3 to 500 bushels per acre, vastly improved in quality.

A. CHANDLER.

PAPER FROM THE BARK OF THE MULBERRY.

NORTHAMPTON, MASS., July 30, 1850.

Secretary of the American Institute:

Dear Sir—It is now some ten or twelve years since the culture of silk attracted the attention of the public. The American Institute put forth its energies to promote a cause which must ultimately succeed in the United States. What has been done by other nations can be effected here, particularly when a more dense population will inevitably call into requisition every agricultural appliance. The energy and enterprize of our countrymen, engaged in mechanical and scientific pursuits, have produced results of the most gigantic character in magnitude and importance, although they have, as it were, but just entered the field of improvement and invention. There is much yet to claim their attention.

Many years since I suggested to the Institute, through our departed friend, the late T. B. Wakeman, Esq., that the bark of the mulberry might be applied to valuable purposes, if means could be devised to separate the bark from the annual growth of the wood, by some dissolvent or mechanical means. It was hoped that the process of manufacturing hemp in the west, which seemed to be rapidly developing itself, might aid us in this particular. But no one has appeared to embark in the enterprise, with zeal calculated to ensure success. It is true some experiments were made by members of the New-England Silk Convention, so called, but with no desirable success, and thus the business has rested to the present time.

Last autumn I headed down my Canton mulberries, and covered them with earth in the field. They were opened this spring and peeled as readily as when deposited. I had saved them, in hopes of having them tried by a new flax and hemp company in this town, which has not yet gone into operation. Therefore I caused the bark to be stripped from the stalks by hand, and have saved a considerable quantity of it, specimens of which I forward to you. Now, how to separate the outside cuticle from the bark is a question undecided; whether to be dried and pounded, or to be rotted as flax and thus prepured for spinning and the loom, remains to be determined.

It was my desire that samples of bark silk, fit for the loom, might be seen by you at the fair in October. But my health and age does not warrant that gratification, being now in my 85th year, I do not expect the pleasure of ever visiting New-York again.

I have on hand a beautiful nursery of Canton mulberry, some of which are now six feet high from the ground, grown this season with the most exuberant foliage. These I hope may be cut and stripped of the bark the coming autumn, say in September or October, for experiments. The use of the bark will never interfere with using the foliage for feeding worms, as they would finish their work before the time came for peeling the bark, and the nursery requires to be headed down to the ground every season to promote and multiply the stalks of the next year. Some of my hills, of this year's growth, would now yield a pound of bark silk. These were imported from Canton in 1834, through an American missionary from this country, and are probably the first genuine seeds ever received from the Celestial Empire. I have kept this nursery in existence to this time. I have also a cocoonery of 100 by 20 feet, with convenient fixtures and ample accommodation, including ventilating cradles, plenty of foliage, and eggs for gratuitous use, but no offers to occupy. I had procured nearly 100 ounces of eggs for distribution to encourage the pursuit, but no application for these gratuities. The trees have been mostly destroyed, consequently eggs are not wanted. I had hoped that some enterprising person might be found to carry out my plan, both of feeding and making bark silk, using up the odds and ends of the mulberry patch annually. I do not yet despair of the silk business becoming a great source of national wealth and private emolument, as it now is to China, France and Italy. But when? Who can tell?

The Rev. Eli Smith, missionary to Syria, married in this town a lady, once engaged in cultivating the mulberry tree. They took out roots and cuttings which were planted, and are now growing luxuriantly, as per advice from Beyroot. They were set out for ornament and shade; they have grown wonderfully, develope a large and beautiful leaf, superior to any before seen at Beyroot or Constantinople, and attract the admiration of all who see them. I should be glad to hear whether the Canton or Multicaulis will be used there for making silk, but may not live to be informed.

Canton seed has been planted within the city of Mexico during the late war, carried there by a young man who cultivated the mulberry here.

In China or the East Indies, rags are not used to make paper, but some other vegetable fibre; the same also in the Sandwich Islands. Paper has been made in this town of mulberry foliage, and used for printing on. Mr. Wakeman, to whom I sent a specimen, wrote me that it was superior to any made of rags, as it never clogged the steel pen. I enclose you a small sample of which I had several reams made in 1834. In the manufacture of which, some of the bark, such as now sent you, was used, and the specks are caused by the cuticle which I refer to as desirable to have separated.

Respectfully yours,

D. STEBBINS.

ORIGIN OF THE DURHAM CATTLE.

Extracts from a treatise on the short horned or Durham race of cattle, written by Mon. G. Lefebre, St. Marie, Inspector General of Agriculture. Published at the National Press, by order of the Minister of Agriculture and Commerce, Paris, 1849.

This is one of the volumes presented by Alexandre Vattemare to the American Institute. Translated, July, 1850, by Henry Meigs, Secretary of the Farmers' Club.

"One cannot obtain in England a passable bull for less than 1,200 to 1,500 francs, or a good bull for less than 2,000 to 2,500 francs, a first rate one for 5, 6, 7, 8 or 10,000 francs,"—$2,000.

In the 17th century the family of the Aislabies, proprietors of Studley Park, raised on that domain highly prized short horned cattle. The ancestors of Sir Edward Blackett, who inherited Newby Hall, also possessed celebrated cows. In 1640, Sir Hugh Smithson, heir of the title of the Duke of Northumberland, had formed at Stanwix (his residence) a herd of cattle whose reputation was spread far and wide. Such was the strong taste of this nobleman for cattle that, in the House of Lords, he was often styled, "*The Fatter of Yorkshire.*"

In the county of Durham many breeders make the amelioration and superiority of the short horned race to date back more than four hundred years. Before 1740, the period when the Dutch importations for Sir William St. Quintin, Sir James Pennyman and others took place, Messrs. Milbank, Mason and

Sharter had for a long time bred highly esteemed cattle, whose stock was authentically the ancient Teeswater race. These facts render very doubtful the statements of any improvement made by the Holland crossings.

The mother of Hubback was of the pure short horned race. She had a medium size—her body reaching near the ground, great softness of hair, and a good milker, keeping in a remarkably good condition, notwithstanding she had no pasture, except such as was found on the public highway. Being coupled with the bull Snowden she produced Hubback. Her owner soon afterwards sold her and her calf Hubback in the Darlington market. The purchaser sold the calf to a blacksmith, and he gave it as a wedding present to his daughter, who lived in the village of Hornby near Kirkleavington.

Hubback was put to pasture on the commons of the village, where he was remarked by Messrs. Robert Colling & Waistell, who bought him. But it seems they did not know his real value, for not long afterwards they sold him to Charles Colling for 211 francs and 68/100, $42.34. About that time Charles went to Dishly, to pass a week with Mr. Bakewell, who was the first person who appreciated Hubback's worth, for he obstinately refused, at any price, to let him leap any but his own cows. Hubback always kept fat with very little nourishment; his touch was particularly mellow; his winter coat thick and perfectly silky, and he shed it very late in the spring; his eye was very brilliant, but very mild; his horns smooth and of a butter yellow color; his character, peaceable.

The importations into the United States of America of the short horns, have been numerous. They went there as early, at least, as 1783. We will hereafter give a brief account of those importations and the results obtained there, both as to the pure blood and as to the crosses with native stock.

1783. Some short horns were imported into Virginia. The experiment there produced a couple of races, one of which has been devoted to milk and the other to beef.

1791. Mr. Heaton, an old butcher, emigrated from England to

New-York and took with him many cattle from the herd of Geo. Culley, of Northumberland.

1796. Heaton imported a male and female, put them on his farm in Westchester, New-York. At his death his herd was sold and dispersed; but the cross they produced is still perfectly traced in the cattle of that county.

1797. Mr. Patton, of Kentucky, purchased a bull and a cow proceeding from the Virginia importation of 1783, and of the milker race. The mixed race, obtained by crossings has shown itself altogether superior to the native stock, both in relation to the milk and the beef, for it has not been rare for the cows to give thirty quarts of milk per day.

1803. The Kentucky and Virginia breeders continued to make purchases; and out of gratitude to Mr. Patton for the introduction of them, they called these cattle the *Patton race.*

1815. Mr. Cox imported from England, into the county of Rensselaer, New-York, a bull and two heifers who had high reputation as milkers. At the death of Mr. Cox, his herd was purchased by Mr. Bullock, of Bethlehem, Albany.

1817. Mr. Landers imported into Kentucky six cows of the pure blood and excellent milkers.

1818. Mr. Coolidge, a merchant of Boston, imported the bull Cœlebs and heifer Flora, from the herd of Mr. Mason, of Chilton. In 1820 Mr. Coolidge sold them to Colonel Jaques, of Charlestown. Flora gave $31\frac{1}{4}$ quarts per day, and produced fourteen calves. Cœlebs is grand, compact, body near the ground, weighed when in midling condition 2,174 pounds. The cows proceeding from this stock, pure or mixed, give very rich cream, so much so that Mr. Jaques calls them *cream pots.* Their forms are of perfect symmetry.

In 1818, same year, Mr. Faulkner, of North Allerton, and Mr. Wetherell, of Darlington, imported into Brighton and Northborough, Massachusetts, two pure blood bulls, whose descendants have every where been distinguished as fine milkers.

CULTIVATION OF CORN, AND GARDEN VEGETABLES.

To the Board of Managers of the twenty-third Annual Fair of the American Institute:

Gentlemen—In compliance with your request, I hand you a statement of the treatment pursued by me in the cultivation of corn, and other agricultural products.

Indian Corn.

The several varieties exhibited at the recent fair, were grown on clay loam, and manured in the hill with guano and charcoal, in the proportion of one part of the former to four of the latter, and the bulk of six table spoonsfull applied, which is covered with from one to two inches of soil before planting. The seed is dropped about six inches apart, at right angles forming a square with an additional seed in the centre, which in case all germinate, is removed, never allowing more than four plants to stand in one hill, and if three only come up, do not replant. The furrows are deeply drawn, four feet apart. By allowing this space, a good crop of pumpkins, the seed of which planted with the corn in every other hill, in every other row, is also obtained.

The seed of both is soaked from twelve to twenty hours in a solution of glauber salts, at the rate of one pound to one gallon of water, and rolled in plaster.

I prefer early planting, but never venture planting in the seed before the first of May. The past season, in consequence of the unsettled state of the weather, it was delayed until the tenth.

I cross plough and hoe three times. At the second hoeing distribute a handful of unleached wood ashes round each hill, and if the season should be wet an additional quantity may be advantageously used. At the second hoeing the ground is left level. At the third a moderate hill is formed so graduated that the elevation is only slightly perceptible.

The stimulating effect of guano on this plant is distinctly visible causing it to sprout earlier and advance more rapidly than when treated with any other description of manure used by me, but even when combined with charcoal, for the purpose of retaining all the ammonia with the view of producing greater effect, it is nevertheless not desirable to depend solely upon it for supporting this rank growing plant until maturity. Hence the employment of ashes which of itself, especially in clay soil, is an excellent fertilizer for this crop.

It is my custom as soon as the corn is glazed, to top the plants at the first joint above the ears, and strip off all the leaves below them, which when cured at this stage, I am of opinion they contain as much nutrimeut as the entire stalk at the period it is usually cut when topping is not practiced.

The husking is performed on the field, and the cows turned in to eat the husks, thus leaving nothing but the naked stalk, which as soon as the active farming operations are over, are cut down by separating them at every joint, covering the field with what I consider a tolerable coating of manure, thus returning to the soil a portion it had produced, and if answering no other purpose than that of assisting to keep the ground loose, is, in my opinion, the best disposition that can be made of this, the coarsest and least valuable of this important plant.* If the ground will permit, they are immedately plowed in, and if allowed to remain on the surface until spring, they offer no obstacle to succeeding cultivation.

On ground intended to be replanted with corn, I do not think the utility of this course can be denied. Pursuing this plan in connection with the other mode of treatment mentioned, I have three years in succession grown corn in the same locality with invariable good results.

Several varieties having been grown on the same field, it is to be regretted that their respective yield was not as definitely ascertained as now wished. The entire crop, however, was good.

Of the white flint varieties, I prefer that known as the Long Island or Douglass; of the yellow, the golden Sioux, for which

* When the quantity is very large, a cutting machine might be employed to advantage.

the premium for the best yellow corn you deemed proper to award. As regards quality, perhaps the best I can say of it is, that all I could spare was purchased by seedsmen at six shillings per bushel of ears, the varieties taken indiscriminately.

Cattle Roots.

Last season I made the following trial by manuring ground intended for mangold-wurtzel, sugar-beets, and several varieties of carrots, a quantity of which I raised the previous year, for fodder, and when feeding, collected the manure—both solid and liquid—made from each species of root separately, which in spring was applied to the respective plants with beneficial results.

Ground for carrots especially, should be deeply worked and thoroughly pulverized, and I have observed they thrive best in damp situations.

The turnip-rooted cabbage—above ground variety—exhibited in connection with the beets and carrots, were grown on clay-loam highly manured; in the absence of a liberal supply of manure, their cultivation had better be omitted. They should be kept free from weeds by frequent hoeing, leaving the root exposed.

For fodder, they are more valuable than turnips, and in the early stage of their growth are also used for culinary purposes, but as far as my observations extend, are not extensively cultivated.

Potatoes.

Of the nine varieties, (chiefly from European seed) which I this year grew, specimens of which were to be seen at your last exhibition, were harvested in sound condition, excepting the Mercers and Western-red, a portion of which were rotten, all were planted at about the same time, on the same locality, and received similar treatment. The soil was loamy and had been highly manured the previous year for a variety of tap-rooted vegetables; no additional manure was used, excepting a moderate top-dressing of wood ashes. Subsequent to planting, next year, I purpose growing chiefly the foreign seed this year acclimated.

While speaking of this valuable product, it may not be out of place to mention that for the last two years I have succeeded in raising two crops of early Sovereign potatoes, and one-third of a crop of Red-top turneps from the same ground during one season by the following method of planting: As early in spring as the condition of the ground will permit; the first planting is made in drills three feet apart; from the first to the tenth of June, according to the forwardness of the first, I put in the second between the rows, opposite the centre of the space between the first planting. About two weeks elapses before they appear above ground, and a fortnight more before attaining any important size, which brings them into the early part of July, at which time the first crop is ready to be taken off, leaving the entire space for the second. Toward the latter part of August we find between the rows of potatoes room to drill in turnep seed, which, before requiring more space, the second crop of potatoes is at maturity, which when taken off leaves the entire ground for the turneps. By this mode of planting about four weeks is saved for the second crop, to which the success of the experiment may be attributed.

Notwithstanding there are several varieties of potatoes which are a few days earlier, I still prefer the Sovereign. With me they have kept as well through winter as the later kinds, and have never been affected with the rot.

Garden Products.

The basis of successful cultivation being dependent on the condition of the soil, which, especially with land that has been worked for a long period of years, is attributable to a system of manuring as well as the quantity of manure applied. It is of the first importance that a judicious preparation of the soil should be adopted, and as every tiller of the ground who is desirous, with the view of advancement, of tracing effects to causes, has some practical method, I beg leave to offer the plan pursued by me in preparing ground devoted to the cultivation of garden products.

As soon as the ground is cleared in autumn, I spread over it barn-yard manure, selecting that which is well rotted and free as possible from seeds, incorporating it with the soil by deep spading. In spring it is again broken up, and a coating of wood ashes and charcoal applied, which is thoroughly mixed with the soil, pulverizing it at the same operation.

The barn-yard manure is employed to furnish humus, the ashes to supply potash, which enters largely into the composition of most garden products; the charcoal to supply free carbon, which in connection with the carbonate of potash furnished by the ashes is freely taken up by the plants, and I have observed this course of manuring to be attended with excellent results.

Very respectfully,

JACOB P. GIRAUD, JR.

Bergen, N. J., Dec. 26, 1850.

THE MACHINERY AT THE LATE FAIR.

BY A. CHANDLER.

The machine room was an object of great attraction. The managers replaced their old boiler, which had become somewhat defective, and inadequate to supply the power required, with three new cylinder boilers, set on the plan of D. Griffin, which furnished an abundant supply of steam, at a cost for fuel 30 per cent less than the old one. The room was enlarged by adding 25 feet to its length. The shafting and counter shafting was also extended and put in complete order; the whole at a cost to the Institute of near $3,000. Notwithstanding these arrangements, affording adequate power and shafting in a room 25 by 180 feet, it was not sufficient to accommodate the machines that were offered for exhibition requiring to be put in operation. And it is a fact creditable to the ingenuity of our people, that the greater portion of the machines exhibited, were either new inventions, or important improvements on old ones.

WOOD PLANING MACHINES.

There was six machines for this purpose on exhibition, and the competition unusually spirited. The machines of S. B. Schenck and J. H. Lester, do the work of planing the surface, tongueing and grooving complete, in one operation with revolving cutters. That of Norcross performed the planing with revolving cutters; the plan for tongueing and grooving was shown in model. The machines of Norcross, Lester and Schenck, cut upon the principle of an adze, lengthwise of the board in curves upward from the surface, and the cuts must be in rapid succession to leave a flat surface; the shavings are consequently fine and light. Kittle's machine performs its cut flat across the surface of the board in sweeps indicated by the curves of a circle, and having cutters in the form of gouges, removes heavier shavings at a cut, and of course more expeditious. These are followed by a single stationary cutter for smoothing, with reciprocating cutters to tongue and groove the edge.

The machines of J. P. Woodbury and E. G. Allen have stationary cutters for planing the surface. Woodbury's has rotating cutters attached for tongueing and grooving. Allen exhibited a separate machine for tongueing and grooving. The revolving cutters pass a board at the rate of 35 to 40 feet per minute. The stationary cutters, for surface planing, pass from 80 to 120 feet per minute. It was conceded that Allen's did the most work at surface planing in a given time.

All these machines are intended for planing pine or other soft wood, which is mostly used for flooring, ceiling, &c. The stationary cutters are most expeditious, and do good work. But it remains to be determined whether by the increased velocity too much heat may not be generated, the tendency of which would be to soften the knives, gumming, and other interruptions that may prove to be more than equivalent to the gain. Another year will practically settle the question of superiority; as several of the stationary cutters are put or being put in operation in the city of New-York and elsewhere.

McCULLEY'S IMPROVED SPINNING FRAME.

This machine attracted attention for the workmanship it displayed. It claims advantages over all other kinds of throstle or common ring spinning frames, among which are, a saving of half the power; occupies less space; requires but half the oil; lessens the cost of repairs one half, dispenses with drums and all banding; can be operated at greater speed, with other minor advantages. The machine has been some two years in operation in the U. States and Europe, and its claims are attested by highly respectable manufacturers. The proprietor of the patent is Arthur M. Eastman, Boston, Mass.

ENGINE LATHES.

The lathes on exhibition were of the most excellent workmanship, and elicited unusual praise. They were from the following manufacturers: McCulley's, from the Lowell machine shop; D. D. Badger & Co., New-York; A. Inslee & Co., Newark, N. J.; E. & S. D. Gould, Newark, N. J.; T. J. Lindall, New-York; J. Snow & Co., Meriden, Conn.

UPRIGHT DRILLS.

One from the Lowell machine co., and one from A. Inslee & Co., Newark, N. J., were of very superior workmanship.

EMBOSSING PRESSES.

The immensely powerful and well constructed presses of Messrs. David Dick and F. J. Austin, of the city of New-York, accomplish all that is required in embossing in the most perfect and expeditious manner.

COMPOUND PLANER.

This machine is intended for planing iron surfaces. It is so constructed that it may be applied to a variety of uses in this department of labor with advantage. It performs its work with great accuracy, and the workmanship displayed on the machine itself, is highly creditable It is from the Lowell machine shop.

LATH MAKING MACHINE.

Mr. C. Graff, of Philadelphia, exhibited an entirely novel machine for this purpose. It does its work complete, saves much labor, and is so portable that it may with ease be removed to any place where its services are required.

LEATHER SPLITTING MACHINE.

Rowe's patent, exhibited by Messrs. Brown, Strevell & Zeh, of Albany. This machine does its work with great exactness and rapidity, and for the purpose intended, was deemed by the judges to be very useful.

ROPE AND CORDAGE MACHINE.

Messrs. Slaughters & Perry, Frederickburg, Va., exhibited a machine for making rope and cordage, which attracted much attention. Its simplicity, compactness, and the perfection with which it completed its work, were much admired and gave conclusive evidence of its utility.

MACHINE FOR BACKING BOOKS.

This is a *new invention*, by Mr. Charles Starr, of the city of New-York, a practical binder, and *not* an improvement of a previously existing machine. It is a substitute for the hammer in forming the grooves to receive the boards or covers of the book, and keep them in their proper position.

By the ordinary method, the book after the back is glued and rounded, is placed between a pair of jaws made either of wood or iron, which are inserted between the cheeks of an ordinary cutting press, where it is held fast by the screws which pass through the two cheeks of the press. The edges of the jaws are placed just far enough from the back to allow a groove to be formed of the thickness of the cover. When thus prepared, a hammer is applied to the back, and by repeated blows over the whole surface of the back the grooves are formed.

The machine now introduced, requires the book to be inserted between the two iron jaws which are suspended by axles or journals, that the book, by means of a crank, may be so turned as to present any part of the back to the face of the roller. A steel roller, two inches in diameter, and corresponding in length, or nearly so, to the length of the book, and parallel with it, is held between two movable brass boxes, by a shaft passing through the centre of the roller, and through the boxes, serving as a journal on which the roller is turned. When raised from the book, this roller is about half an inch above the back, inclined a little on one side. Two sliding gages, shaped to the back of the book are placed immediately above it, and in front of the roller, and when the book is inserted between the jaws from underneath, it is forced up by the hand against these gages, which perform the double purpose of regulating or equalizing the round of the book, and of determining its height to allow of the formation of a groove of the size required. These gages are attached to sliding bars, which pass through the frame on each side post, and constitute inclined planes, raising the gages from the back of the book, as they pass off beyond the two ends. When the book is fixed in its position, and is held fast by the screws which pass through the jaws, the gages are thrown back as above stated, by a lever which at the same time disengages two pins or hold fasts, that keep the jaws upright while the book is being adjusted, allowing them, when thus free, to swing back and forth under the pressure of the roller.

When the book is thus prepared the roller is let down upon the centre of the back, which being turned by a crank, allows the roller to pass down from the centre to each side, by which means the grooves are formed over the edges of the jaws.

Two levers, loaded with weights, and bearing upon the pins connected with the brass boxes above mentioned, press the roller hard upon the back by means of the weights. The whole is under the control of the foot, a treadle being connected with the levers by two upright connecting rods. The weights are held suspended, and the roller is consequently kept in a raised position by a ketch which is disengaged by the foot to produce the pressure.

A cast iron frame, consisting of two upright posts and a cross piece at the top, connects all the parts and holds them adjusted in their proper place. The frame stands on an iron table, to which it is made fast by bolts from underneath.

A smooth roller is used for sunk band or smooth backs, and for raised bands a roller is used with grooves turned in its surface corresponding to the bands on the book.

The advantages in backing books with this machine over the common method, are mainly three. *First.* The preserving of the book comparatively free from the wrinkles or irregular folds that are generally produced by the hammer. This is an advantage of primary importance. *Second.* The securing of uniformity and regularity in the shape of the backs, by means of the gages and an even surface over the whole back by means of the roller, which leaves it straight and free from indentations, such as are produced by the hammer; and in raised bands, the full size of the bands underpressed. And *third*, despatch; saving a portion of the time usually occupied in backing with the hammer, but to a much greater extent in raised bands and flexible work than in the case of sunk bands or smooth backs, varying from ten to one hundred per cent. A great saving of noise might also be mentioned.

MACHINE FOR FINISHING BOOKS.

This is also an *original* invention by Mr. Charles Starr, of the city of New-York, and is designed for embossing, lettering and gilding the backs of books, after they are covered. Although this machine is well adapted to accompany the backing machine, there is no necessary connection between the two, and either may be used without the other.

The finishing of the backs of covers has heretofore been done by one or two methods, both differing from the mode adopted in the use of this machine. *First.* By embossing or gilding the covers before they are put upon the books, making use for this purpose, of a machine which performs the operation by the use of a platten, producing an even or level pressure. There is no difficulty in producing good work in this way, but the objections to this method will be hereafter stated.

The frame work and table of the finishing machine resemble those of the backer with one exception. The entire side posts of the former are upright, whereas the upper part of the frame of the latter has an inclination of about thirty-five degrees backward. Instead of the jaws, as described in the backer, for holding the book, the finisher has an iron box, or book-holder, open at the top, and enclosed by the bottom, two sides and two ends; one side being movable. In this box the book is inserted at the top, the front of the book resting on a false bottom placed inside, of the thickness required to sustain the book in its proper elevation. When the book is inserted, the two sides are brought together upon it by the screws which are turned by a crank and suitable gearing, as is done in the case of the backer.

This box is suspended in the same manner as are the jaws of the backer. The embossing and gilding tools are held and operated in the same way as the roller in the other machine, the tools being heated by steam or hot irons in the head or tool-holder.

Both in backing and finishing by these machines. it is requisite to raise and lower the jaws and box, in proportion to the thickness of the book to be operated on; so as to bring the centre of the radius of the book to correspond to the centre of the journals on which they are turned. The head or tool-holder, must also be raised or lowered by means of the screws at the top of the frame, and the lifts between the head and the frame.

The advantage of this method of finishing books, bound in leather, over that of the flat pressure before they are covered, consists in the following particulars. In the latter mode a case is made for the cover, and an open or loose back is the consequence. A book thus bound is but faintly held together. Or the leather must be put upon the book dry, with extra care, and consequent loss of time, and accumulation of expense; to preserve the embossing from being obliterated, or the gilding from being defaced. Whereas, by the use of this new machine, the books are forwarded in the usual manner with tight backs, the leather being firmly glued on the back.

In finishing books in the ordinary way, after they are covered, whether embossed or gilt, small hand tools are applied with great care and patience, requiring the consumption of a great deal of time; a large portion of which is saved by the use of this machine, which also secures great accuracy in execution.

In the case of plain work, or what is termed "sheep lettered books," a sufficient amount is saved by finishing with this machine to pay for coloring the leather a handsome blue or other color, at one dollar and fifty cents per dozen, and then instead of the common sprinkled cover, we have a handsome colored and embossed cover, at the same price.

Whether, therefore, we have reference to fine or common binding the use of these machines offer great advantages both in style and expense.

EDGE TOOLS.

It is with no ordinary feelings of pride that we refer to this department of American manufactures, as illustrated at our 23d Annual Fair.

The exhibitions made by Messrs. D. Simmons & Co., from their manufactory at Cohoes, Albany Co., N. Y., are unrivalled, not only in the U. States, but in Europe. This manufactory is the oldest in the country, and such is the quality, beauty, and finish of their articles, that they have obtained a reputation through the length and breadth of the States, Canada, the West Indies, South America, in England, and on the Continent. They now turn out daily from 100 to 125 dozen chopping axes, 6 to 8 dozen broad axes, 5 to 6 dozen carpenters' adzes, about 45 dozen hatchets of different kinds, large quantities of Spanish tools of various kinds adapted to those markets. Notwithstanding the immense help of machinery in manufacturing their goods, they give employment to 350 men, nearly all of whom have families. We add with pleasure the fact that Messrs. Simmons & C. will soon be in the field against the world. A case containing a large assortment of their goods is now on its way to the World's Fair in London. We have nothing to fear from the result.

We should do injustice did we not particularize other exhibitors. The edge tools from Mr. Lemuel Smith, East Smithville, N. Y., were highly creditable. We regret that we are not in possession of full statistics of these and other manufactories.

Mr. T. H. Witherby, Milbury, Mass., exhibited some of the most highly finished chisels and drawing-knives we ever saw; and we understand their reputation for quality fully sustains their appearance.

Long & Davenport, of N. York, exhibited a case of very splendid augers.

The case of planes from J. W. Farr, 329 Fifth-st., N. York, were of very excellent workmanship. In the manufacture of these articles, beech of the second growth is most commonly used; but it is said there are other woods of our country equally as good, maple, button-wood, &c., but habit confines the choice to beech, with some occasionally made of box. The irons are of domestic make, of which the materials are in all respects superior, answering every purpose; but as a general thing they are not so well finished as those imported. Twenty-five years ago nearly all our planes were imported, now there are very few.

The exhibition of tinners' tools from Messrs. Logan & Vail, of N. York, was extremely beautiful in point of workmanship, and admirably adapted to the purposes intended.

Such is the superiority of the domestic articles in edge tools, that in some particulars the foreign article, though offered at half price in this market, meets with but little encouragement. We have it from good authority that importations have ceased to affect the manufacture of edge tools in the United States.

A. C.

POCKET CUTLERY.

The manufacture of pocket cutlery has labored under much embarrassment in our country, and has hitherto met with but partial success, and all evidence of progress in this branch of American interests is worthy the attention of the friend of home manufactures.

The Waterville Manufacturing Company, Waterbury, Conn., (to which one gold medal has been awarded for two successive seasons,) have by years of persevering industry, brought the manufacture of pen and pocket cutlery to a degree of perfection unsurpassed by any manufacture of these goods in the world. Eight years since, the president of the company, and its originator, (G. Kendrick, Esq.,) conceived the possibility of establishing the business on a permanent basis in this country. The difficulties of the experiment may not be understood by those who are unfamiliar with the business, but when realizing the great disparity between the rates of manual labor in Europe and in our own country, and further realizing the great difficulty of applying machinery to any portion of this manufacture, the obstacles to the profitable prosecution of the business seem almost insurmountable. They were dependent, in the first place, upon foreign laborers, who alone had the requisite experience for the production of these goods. This class of mechanics were few in number in this country, and, consequently, commanded wages far above the rates received in England. For several years their workmen were those who had earned their experience in English shops. During the first four years they employed about fifty men, but within the past four, they have increased the number to two hundred, of whom about one-half are Americans.

This manufacture is peculiarly dependent upon hand labor. Every department, from the forging of blades out of the bar of steel, to the shaping of the handles from the various materials, requires the careful guidance of the hand, governed by the expert eye of experienced workmen. Every knife passes through the hands of about fifteen different workmen before it is complete. In each, experience and great care are indispensable, especially in receiving a temper which shall be of the finest quality, a point of excellence which this company have reached most successfully. In this dependence upon hand labor lies the greatest obstacle to the success of the manufacture in this country, though the difficulties of this interest did not end here. The market was firmly held by foreign makers, whose years of profitable trade had given them strength for successful competition. Their goods had been long before the people, and their reputation established. But the opposition of the foreign manufacturer was not all. The importers of pocket cutlery were almost universally opposed to the production of these goods in our own country. In fact, they had deemed it almost a thing impossible, that with the disadvantages attending this manufacture, it should be established as a permanent branch of American interest. Their project was deemed most unwise, and its prosecution discouraged by many engaged in the importation of pocket cutlery.

Notwithstanding these ill omens, the ordeal has been passed, and during its progress, English goods have been reduced largely in price, and through the true appreciation of the actual consumers, the wares of this company have met with a ready and constantly increasing sale.

We hail this successful experiment in a branch surrounded with so many difficulties, as new evidence of the inevitable tendency of our own manufactures. While they give us the power of supplying the home demand, they reduce the price of the article to the consumer, and each successful branch of American interests established, gives us increased honor abroad and greater independence at home.

An important fact with reference to the manufactures of the Waterville company is, that their goods are produced entirely in their own shop. No portion of their knives is partially manufactured abroad, but they are entirely made from the materials by this company. Their motto is "*Excelsior*," and they are determined to spare no effort in bringing the manufacture of pocket cutlery to the highest standard of excellence possible, and to so adapt their goods to the wants of our country, that all the inhabitants of our wide-spread republic may demand an American *knife*, as indispensable for the use of an American citizen.

The facts within our reach do not admit of a precise estimate of the extent or amount of this business in our country, though we believe that the capital invested will reach about $200,000, and the amount of goods produced annually nearly the same amount. Of this, the Waterville company have a capital o$f 125,-000, and manufacture about $150,000 per annum.

CHURCH BELLS.

The enterprising proprietor of the bell foundry at West Troy, N. Y., Mr. Andrew Meneely, made a selection from his stock, of ten bells, which he arranged at the entrance to Castle Garden, as a chime. They were skilfully played at intervals during the exhibition, and afforded much gratification to the numerous visitors.

The bells were decided to be all good castings, by the judges to whom they were submitted. In a chime or peal of bells, there is a requisite proportion as to size, weight and figure, to be observed, in order to ensure their accuracy and beauty of tone, which, as these were a selection from the stock on hand, it is probable could not be rigidly adhered to; nevertheless they were in excellent harmony. A. C.

CHANDELIERS, GIRANDOLES, LAMPS, GAS BURNERS AND FIXTURES.

In this department of art, our exhibition was very full; the specimens were of a most beautiful and highly finished character, reflecting the highest credit upon the manufacturers.

The display of chandeliers, girandoles and candelabras, from Messrs. Allcock and Allen, No. 341 Broadway, N. Y., was very extensive; patterns of the most beautiful kind, and all the articles were highly finished. This exhibition was admirable.

From Messrs. Archer and Warner, 119 Chestnut-street, Philadelphia, the display was also magnificent. We would allude particularly to their large chandelier with gas burners, which was lighted during the evenings of the exhibition, and elicited general admiration.

Gas-burners in great variety of form, beauty, and perfection of workmanship, lamps of silver, plated ware, and white metal, in almost endless variety, graced the exhibition.

It is gratifying to be able to announce that such has been the recent progress in the perfection of the domestic products in this department, that foreign importations have nearly ceased. The glass drops and brilliants with which they are ornamented, are still imported from Germany, and constitute almost the only article of foreign production now found in our markets. A. C.

MANUFACTURE OF SHOVELS, SPADES, SCOOPS, &c.

Our domestic productions in the department of manufactures above stated, has rapidly increased within a few years, and has now nearly shut out the foreign articles. This has been accomplished by superiority of workmanship. Those imported will not compare with our own. In new England the manufacture is extensive, also in Ohio, Pennsylvania and New-York. In our neighboring city of Brooklyn, Messrs. Duryea, Rhodes & Co., now turn out eighteen dozen per day. We notice this more especially for the purpose of adding one more to the list of our domestic manufactures, which the enterprise, skill and perseverance of our countrymen places beyond the reach of tariff regulations.

A. C.

WOOLLEN GOODS.

The display of woollen goods at our 23d exhibition, although presenting many very excellent specimens, highly creditable to the manufacturers and the country, was nevertheless, and we regret to say it, not equal to the exhibitions of former years. The reason, it is presumed, are too well understood to require recapitulation, and we refrain from comment on the present occasion.

Broad Cloths.

Three pieces of black, from Messrs. James Roy & Co., Watervliet, N. Y., took the first premium; wool exceedingly fine and the goods highly finished. An elegant dress coat of very superior workmanship has been made of this cloth by Messrs. W. T. Jennings & Co., of N. Y. city, to be exhibited at the World's Fair in London, 1851. Four pieces of black from the Utica Globe Mills, were considered highly creditable.

Cassimeres.

Four pieces of fancy, from the Burlington Mills, Vt., were of superior quality. Two pieces of plain, from Messrs. J. & R. H. Hotchkiss, Woodbury, Conn., were reported of excellent quality. Four pieces of black doe skin, from Messrs. Wethered & Brothers, Baltimore, were very excellent, and received much attention. The fancy cassimeres from the Stafford Co., and the merino jeans from Messrs. Joseph Dean & Co., Newark, Del., were of good quality and worthy the commendations they received.

De Laines.

The specimens of cashmere de laines, from Mr. Robert Rennie, Lodi, N. Y., and the mousselin de laines, from the Manchester Print Works, Manchester, N. H., were very creditable.

The American Institute cherishes a hope that at no distant day it will possess the ability to aid essentially this branch of industry, by offering such rewards as may induce the cultivation of madder in our own country, of superior quality, for which much of our soil is so well adapted, and our climate is deemed to be vastly superior. New designs and new tissues also will soon make their appearance, if excited by moderate stimulants in the form of rewards for superiority.

Shawls.

Long shawls, from the Bay State Mills, Mass., and those from Messrs. James Roy & Co., Watervliet, N. Y., were of a very superior quality. The perseverance of the proprietors of these establishments merits the highest praise. Notwithstanding the disadvantages under which the manufacturers of wool have been laboring, the superiority attained by their efforts has placed the foreign article in the back ground, the domestic now claims the preference. The same class of shawls from Mr. D. Kellogg, Skaneateles, N. Y., were excellent, and deserve commendation.

Blankets.

Superior specimens were in exhibition from the Rochdale Mills, N. Y., and also from Messrs. Hall & Springfield, Rochester, N. Y.

White and Red Flannel.

Six specimens from Messrs. Gilbert & Stevens, Ware, Mass., were of decided superiority. The appearance of these goods was a strong commendation. We learn from one who has made an actual test of their quality, that he considers them equal to any Welsh flannel of the same degree of fineness, that has come under his observation. A. C.

CARPETING.

The display of carpeting at our 23d Annual Fair, attracted deserved attention. The specimens of Brussels and velvet tapestry from A. & E. Higgins & Co., 62 Broad-street, N. York, were superior to any thing of the kind heretofore produced in the United States. The manufacturers have attained a great degree of perfection within a very few years. The specimens were pronounced by competent judges equal to any imported. We understand Messrs. Higgins & Co. are very extensively engaged in this manufacture, and merit the attention of all who are interested in the success of domestic production.

The specimens of Brussells carpet from the Bigelow Carpet Co., Clinton, Mass., were deserving, and received the highest commendations. The brilliancy of their colors, and exceeding evenness and compact quality of the fabric, did this company great credit.

There were specimens of rugs and three ply carpeting on exhibition, of excellent quality.

It would be very interesting to know what portion of the consumption of the country is now supplied by the domestic article of carpeting, and also the effect of our present tariff upon it. On these subjects we shall endeavor to obtain full and accurate information for future comment. In looking over the official tables of imports, we were somewhat surprised at finding the annual value of this article imported, so variable, for the last 20 years. For instance, in 1830 the value was $201,649, in 1832 it had increased to $557,775, and in 1839 to $612,607. In 1842 it had declined to $242,309. In 1848 the amount in value was $643,187, the largest in 20 years. In 1849 (the last report published) the import of carpeting amounted to $493,058, in value.

We sincerely hope to have the pleasure of placing the article of carpeting in the list with those articles which, through the indomitable enterprise and energy of our people, have rivalled the foreign productions, and driven them from our markets. A. C.

NEEDLE WORK AND FANCY ARTICLES.

The Board of Managers tender their acknowledgments to the Committee of Ladies, to whom was submitted, at the late Fair, a list of more than one hundred specimens of needle work and fancy articles for examination and report. The alacrity and impartiality with which this service was discharged, aided the managers very essentially in bringing the Fair to a close; and we are happy to assure them that their decisions have met the general approbation.

Among the articles reported on we particularly notice the following:

The shirts from Mrs. Mary Cleveland, 603 Broadway, decided to be the best, made in a very superior manner. Those from Mrs. Van Houten, 82 Nassau-street, and from Mrs. E. Haight, 200 Grand-street, were very excellently made.

Embroidered ladies sacks and mantillas, from Messrs. Brodie & Bell, 61 Canal-street, very superior. Those from Beekman & Cutter, excellent workmanship.

Case of millinery from Mrs. W. Simmons, 564 Broadway, was deemed the best. That from Mrs. W. Rollings, 191 Spring-street, very good.

The ornamental hair work for jewellers, from Miss Linherr, 293 Broadway, pronounced to be of the most exquisite workmanship, surpassing any exhibition before presented.

Two boxes of artificial flowers, made of floss silk, by Miss C. Nichols, were very beautiful and ingenious. The best artificial flowers were from Edmonds & Gill, 88 Cedar-st. The artificial leaves from Leon Guillaume, 122 William-st., were very superior and the best on exhibition. These articles are the product of female labor, and constitute a very appropriate occupation. The value of the annual importation is very large, and we hope to see the domestic product encouraged. The specimens on exhibition were equal to the best imported.

Muslin embroidery from Mrs. C. Porter, 542 Washington-street, was the best. That from Miss S. K. Lynds, Brooklyn, very good. Two specimens of embroidery by a very old lady, extremely well done.

A cushion and handkerchief, from Miss M. G. de la Tour, specimens of beautiful embroidery.

One pair of silk stockings from Miss Lucy Curtis, Southberry, Conn., very beautiful.

Lace veil, very neatly worked by Miss E. A. Ferguson.

Shetland wool shawl, very handsome, and neatly made, by Miss Ellen Kemble, N. Y.

One skein of yarn carded and spun by Mrs. Benjamin, who is 105 years old.

A basket made of cloves, by Edward Rauskie, a blind boy.

A child's worsted hose, beautifully knit, by Mrs. Willis Patten, N. Y.

A. C.

"AERO-THERME OVEN," EXHIBITED BY B. RODRIGUEZ, OF NEW ORLEANS.

This is undoubtedly an original conception, and entitled to favorable consideration. Ovens constituted on this plan, for extensive baking establishments, are kept constantly and uniformly heated by the process of converting coal into coke, or wood into charcoal. Mr. Rodriguez placed before our committee at the 23d Annual Fair, evidence of a very satisfactory character, that at New Orleans and Cincinnati, ovens built upon this principle were in successful operation, converting from fifteen to twenty barrels of flour per day each into bread of singular uniformity and excellence, as far the baking was concerned. The coke or charcoal resulting from the process, sells in the markets for more than the cost of the material used in producing the necessary heat.

Bread baked for our navy and commercial marine, as well as the bread for ordinary use, in our commercial cities and along the sea board, amounts annually to an immense sum. The portion of its cost which arises from the consumption of fuel, we are unable at the present time to state. It is certainly no inconsiderable item. By the process of Mr. Rodriguez this portion of the cost of bread, it seems, may be entirely saved. A. C.

COPPER AND IRON IN COMBINATION.

Mr. E. G. Pomroy, of Covington, Kentucky, presented at the rooms of the Institute, in August last, specimens of iron and copper, apparently in perfect combination. Mr. P. asserts that it is capable of being rolled into sheets of any desirable thickness, drawn into wire, or made into bolts, presenting in all cases the appearance of entire copper, and as he believes, may be used for any of the purposes of copper with advantage, as it can be afforded at 50 per cent less in cost. We have no knowledge of any application of the metals thus combined. Its appearance was favorable, and under the operation of the hammer it sustained in appearance the character it was alleged to possess. A. C.

SUPERIOR UPLAND COTTON.

J. V. Jones, Esq., of Burke county, Georgia, exhibited at our 23d Annual Fair a bale of very superior upland cotton, which for length of staple, silkiness, and purity of color, claimed particular attention. This was the result, we understand, of a careful selection of seed and attention to cultivation. The planter has been three years in producing this result. In 1848 he selected the seed from one boll which produced eleven stalks, from the seed of which he was enabled to plant one acre in 1849, the produce of which was one bale of 470 lbs., which was sold on the 19th of January, 1850, in Augusta, at 14 cents per pound, two cents above the highest market price at that time. It was pronounced by the best judges of cotton at Augusta and Savannah to be the finest bale of upland ever seen in those markets. It was ginned as it was picked from the field.

Planters and cultivators generally have been too much in the habit of neglecting the selection of their seed. It may with safety be adopted as a rule that whatever the cost may be for carefully selecting the most perfect seed, the improved quality and quantity of the crop will more than repay. We cannot "*gather grapes of thorns, or figs of thistles.*" A. C.

GLASS,

Is one of the most important articles for the convenience, comfort, and luxury of man, which art has achieved. The time when the art of making glass was discovered, remains undetermined. At this distant period, we may not expect that sufficient additional light will be thrown on the subject, by which the date can be fixed with any degree of precision. It is supposed to have been known to the ancient Egyptians, but there is nothing very positive to sustain the supposition. It is said the beads wherewith some mummies are adorned, composed of earthernware, have an external covering of glaze, and that recent searches among the tombs at Thebes have disclosed some pieces of glass of a blue color. Some writers assert that the Chinese to this day are wholly unacquainted with the manufacture of glass, and yet their earthern vessels are, and have been for centuries, covered with glaze.

The best authority ascribes the discovery to the Phœnicians. The beautiful glass made by the inhabitants of Sidon and Alexandria, A. D. 79, was cut, engraved, gilded, and stained of the richest colors in imitation of precious stones, and exported to all parts of the then civilized world. From thence it was carried to Rome where it was practised for a long period. Venice subsequently excelled in the manufacture of glass, and enjoyed a monopoly of it for many years.

The first window glass manufactory in England was begun in 1757. Sheets of blown glass for looking glasses and coach windows were made in England in 1673 by Venitian artizans. About 1688 the casting of mirror plates commenced in France, and such was the progress and perfection of its manufacture there, that for near a century France held a monopoly in this department of the art. Immense improvements have been made in the manufacture of glass, and it has been supposed to have reached perfection only in England and Bohemia.

English flint glass has been celebrated for many years. The beautiful crystal appearance of the vessels made of it, particularly after having been cut; such as tumblers, wine glasses, decanters, and dishes of various kinds, have obtained for it almost universal admiration; and it constitutes an article of vast amount in the annual exports of Great Brittain. The name of flint glass originated in the fact that formerly the *silicious* portion of it consisted of flint, which was calcined and ground. The use of flint has been entirely discontinued, and sand, of a peculiar quality, substituted.

In Bohemia, one of the Austrian States, with a population of four to five millions, one fourth of the whole are engaged in manufactures. Few of their products are much known in foreign countries, except their linen and glass. The Bohemian glass, though not so pure as that of England or France, has stood unrivalled for the beauty of its gilding, staining, painting, and its lightness and rich appearance.

The peculiar properties of glass are exceedingly interesting; some of which we will state It is highly elastic, sonorous, and has been made malleable. It naturally absorbs a portion of light—in one form, it polarizes light—as a lens, it refracts it; with a polished surface, it reflects it—in the form of a prism, it decomposes it. The refracting power of glass is said to be in exact proportion to its density. It transmits nearly all the heat of the sun's rays, but refuses to transmit the artificial heat of ordinary fires, detaining or absorbing the whole of it.

It resists all the acids except the fluoric, by which it may be dissolved at common temperatures. It may be easily drilled if the drilling tool be lubricated with camphorated spirits of turpentine. Bells have been made of glass in Sweden, which rival those made of metal in power and sweetness of tone. Flutes and other musical instruments have also been made of it. Glass may be drawn into fine threads and woven with silk so as to produce the most beautiful fabrics. It is electric by friction, but a very imperfect conductor of electricity. If large quantities of electricity are made to pass through it, the glass is reduced to powder by the shock. It melts at 10.170° F., or 70° Wedgewood; will expand the $\frac{1}{1115}$th of its length by raising its temperature from 32° to 212° F.

Nature elaborates a substance nearly, if not quite resembling glass, and uses it for the preservation of a variety of plants; for instance, bamboo, rattan, the stalks of Indian corn, wheat, rye, oats, barley, rice, the sugar cane, &c., are all covered with a thin coat of silica, which renders them impervious to water.

It would be difficult to compute the value of glass, looking alone to the aid which science has derived from it. It is only about 240 years since Gallileo first discovered the satellites of Jupiter, through the aid of a rude and very imperfectly constructed telescope. The immense advances which the science of astronomy has since made, so vastly important to the pursuits of life, have been mainly through aid derived from the material of glass.

It is about sixty years since glass was first manufactured in the United States. The first establishment was erected in Boston for making window glass. The business has advanced to a very great degree of perfection; so that now, the domestic article, in a variety of forms, stands second to none.

We would call particular attention to the exceedingly beautiful specimens of flint glass from the Brooklyn Flint Glass Company, exhibited at our 23d Annual Fair. They favorably compare with the best imported flint glass. And also from the same establishment, to specimens in imitation of the Bohemian glass, which fully equalled the best imported, and in some particulars even surpassed them.

The plain cut and colored glass from John L. Gilleland, No. 9 State-street, N. Y., was of superior workmanship and beauty.

Painted glass from Woram & Houghwout, 561 Broadway, attracted much attention.

Specimens of glass from the New England Glass Co., Boston, Mass., were highly meritorious.

The exhibition of engraved glass from William Oppitz, 136 Nassau-street, N. Y., was superior to any thing of the kind ever exhibited at our Fairs, entitled to, as they received, the highest commendations. These specimens will bear the most critical examination. The perfection to which Mr. Oppitz has carried the art is truly astonishing. We trust he meets with encouragement.

Specimens of window glass from the Clyde Glass Works, for thickness, evenness of surface, and color, were deemed superior.

The glass water pipe from the Albany Glass Works, was a new and very acceptable article, applicable to a variety of useful purposes.

We regret that we are not furnished at the present time with more ample statistics in regard to the consumption, domestic production, and importation of glass; it would be exceedingly interesting to note particularly the progress of its manufacture in our own country, which we must defer for the present.

December, 1850. A. CHANDLER.

WOOL.

The only specimen of wool presented at our 23d Annual Fair was one bale of pure saxony, from Mr. J. B. Smith, Wolcottville, Ct. The judges pronounced it of excellent quality, and the committee awarded a silver cup. It is to be regretted that we had not a more extensive show, since we are undoubtedly producing some of the finest wool in the world.

Within a few days, Mr. Brown, of the firm of Perkins & Brown, of Akron, Summit county, Ohio, presented at the rooms of the Institute, specimens of wool from their flocks. The specimens were of two kinds, called clothing and combing wool, the product of pure saxon and saxon crossed with the merino. We have seldom seen wool to exceed these specimens. The proprietor assured us that they sold their last two years' clip at an average price of 62½ cents per pound. Mr. Brown exhibited to us a letter from Messrs. Mc Farlane & Stapley, of London, dated November 8th, 1850, in reference to this wool, from which we are permitted to make the following extract in testimony of its superior fineness.

"Dear Sirs—Your favor of 8th of July and 24th ultimo, came duly to hand. We should have replied earlier to your first letter, but have ever since been in correspondence with the house in Aberdeen, to whom the bale of wool had had been sent, and they forwarded it to Yorkshire to have it combed, their combs not being fine enough. After all this delay we have just received the bale back again, without anything having been done with it. But we shall use our best endeavors to report something more satisfactory very shortly." A. C.

To the President and members of the American Institute:

Gents—Agreeable to the promise in my communication of September last, I beg to hand you a few more items for your journal, trusting the same will be acceptable to your numerous readers.

Cossack Asparagus. This plant is known to our Botanists as naturally abounding where the waters are not too deep; it is preferred by the Cossacks to all other vegetables. Dr. Clarke speaks of its excellence from personal experience, when among those people on the banks of the Don. It is prepared like the asparagus, being cut when the shoots are pushing, and the tender blanched parts boiled in water with a little salt, or cut up and stewed with yolk of egg, nutmeg, salt and butter. It may be mentioned here that the French *cuisine* is indebted to the Cossacks for various culinary plants, among which are Tarragon and a delicious species of Rhubarb.

Musa Cavendishii. A very splendid specimen of this species of Palm is now in the botanic garden of Edinburgh, under the direction of Mr. Mc Nab—the fruit is considered by horticulturists as a successful rival of the pine apple; the culture, it appears, is much easier, the produce greater, and the flavor of the fruit nearly equal to that of the pine. As an addition to the orange, &c., of our southern States, this palm appears particularly suited.

Grasses. Among the samples introduced into England lately, for commercial speculation, is a variety of grass from China, possessing all the fibrous qualities of flax, but in a much higher degree than any hitherto known and surpassing in strength, fineness, and length of staple. The linen made with it resembles French cambric, but has a more silky appearance. This grass can be supplied in any quantity.

Panama Grass. I would suggest the enquiry whether this article could not be profitably worked up by our *palm leaf hat factories* in the eastern States.

Cocoa-nut Sugar. The Ceylonese have recently introduced the plan of tapping the cocoa trees, and drawing off the sap, the sugar from which, it is stated, is equal to that from the cane. The flow of sap, we are told, is most abundant.

Cane refuse. The refuse of the sugar cane, which after expression has generally been used in heating the boilers, is more particularly recommended as a *manure* for the growing canes. This plan is said to be attended with profitable results.

Assam Tea. At a late meeting of the London Asiatic society, Dr. Wallich strongly recommended the mixing in small quantities, the Assam tea with that from China, to which, he stated, it imparts "extraordinary strength and flavor."

The Doctor stated that the fault of the climate of Assam for the growth of the tea plant, is that it is not *cold* enough. The *tea* being a *hardy plant*, requires four or five months wintering, after which the new leaves are of a beautiful green. The prices in Assam are 18 to 20 cents a pound.

Prof. Boyle fully supported the observations of Dr. Wallich, and suggested that if the plant could be obtained from Northern China, the results would be infinitely greater, as all the *best tea* was produced there. Important results were confidently expected from the tea plantations in India, depending however on a more general culture.

Citrons. Among the fruits lately exhibited at the London Hortic. Soc., one specimen, the C. Mellarosa, was particularly distinguished. In appearance it greatly resembled the *tomato*; flattened at the base and top, and ribbed, showing a disposition in the parts to separate, as in the case of the Chinese fingered citron. This species was highly perfumed.

A very curious and important fact, recorded by Athenæus, shows that the citron possesses the peculiar power of resisting or counteracting the venom of the serpent; the discovery was accidental, but fully established by actual experiments on a slave condemned to death by serpentine venom, and who escaped by eating citron.

Glucose. A new process of making sugar has been patented by Mr. Geo. Riley in England: the meal of Indian corn (maize) is boiled under pressure greater than that of the atmosphere, in water acidulated with sulphuric acid.

Pulverized wood. Young branches of *white wooded* trees have been ground up, and used by a writer, (Mr. Daniells) in Chamber's Journal, Sept. 1850, and given to horses and cattle in the proportion of 3 pints barley and 3 pints wood-feed, on which even gig-horses do well—rationale, the woody matter of trees in its chemical nature, being nearly allied to starch, furnishes the ordinary material of food in another form.

Pottery. A potter, in Cornia, has lately introduced fine filaments of the *asbestos* into the mass of kneaded clay. By this process the articles are said to be lighter, less brittle, and better able to bear the sudden effects of heat and cold, than those of the common fabric.

Porpoise leather and oil. At the Montreal industrial exhibition, Oct. 1850, some porpoise skins, tanned and curried, were shown, the appearance of which denoted a firmer texture than calf-skins. They have been used in manufacture of shoes; and the Hudson Bay Company prefer this new leather for their *straps* in preference to all others, for *toughness* and *durability*.

The porpoise is very common in the St. Lawrence and the Gulf, and yields considerable oil, which on analysis has been pronounced equal to best whale, and has been used as such in the light houses.

Gentlemen,
With much respect,
your very obedt,
E. G. LANGDON.

December 2, 1850.

RELATIVE TO IMPROVEMENTS IN AMERICAN PRINTS.

The following letter from Messrs. J. Dunnell & Co., of Pawtucket, R. I., in reply to a letter of enquiry, contains important information relative to the pursuit in which they are engaged. We approve their suggestions, and regret our inability at the present time to embrace fully the propositions intimated. We trust it will be in our power before long, and our friends may rest assured that no time will be lost by the American Institute in applying all the means placed at its disposal for the encouragement of the arts, and the protection of labor in our own land. It is indeed lamentable that the stimulants required in the various departments of productive labor, calculated to induce improvement, and place us on an equality if not in advance of other nations, have derived no aid from our own government. The position we have attained has resulted from individual enterprise, struggling for the last half century against a course of legislation so vascillating and injurious as to make it appear almost a miracle that any thing has been accomplished. A. C.

Pawtucket, 4th May, 1850.

Adoniram Chandler, *Sup.'g Agent :*

Dear Sir.—Yours of the 24th April was duly received, but we have been prevented by a press of business from replying till now. We are glad to learn that your Institute is beginning to take an interest in the branch of industry in which we are engaged, and we have no doubt that a decided improvement will be the result. Such has been the case in England, and in a very striking manner in France, and there is no reason why it may not be so here.

We think you are not quite correct in saying that a very *general* prejudice exists against American prints. This was the case formerly, but if you will take the trouble to enquire of the large Houses in New-York they will, we think, convince you that in many styles exhibited there during the past two years, the Americans are admitted to be but little behind the English, either in lustre, durability, or originality, while in several instances the British printer has distinctly allowed the superiority of the American articles, in every particular. The prejudice is now confined, principally, to towns remote from the large cities, where it is often fostered by the country dealers, who often sell American prints under the name of English prints, for the sole purpose of humoring this prejudice in favor of a foreign production. The fact, however, that American calicoes are thus sold after they get into the hands of the retailers as British calicoes, is sufficient to show that the *quality* is not considered inferior.

The best mode of stimulating improvement in our business is, undoubtedly, the mode adopted in France where paper diplomas have been found to produce little effect with manufacturers who are unable to get up a proper assortment short of $200 or $300.

We refer particularly to the mode adopted by the "Societè d'Encouragement," and the "Societè Industrielle" of Mulhouse. The latter society has done more, probably, than any institution in the world to improve calico printing. In fact, they have elevated it to the dignity of one of the fine arts. There is nothing which the French printers will not achieve under the amazing stimulus imparted to their industry by that Institution. We see the effect in the new tissues, new colors, and new designs which are every year appearing, and which make both the English and American printer subject to the French printer.

One of the subjects which we take the liberty of recommending to the especial notice of the Institute is the cultivation of Madder in this country. Madder should no longer be brought to the American printer, at vast expense, across the Atlantic. The rich bottoms along our western rivers will grow madder of far better quality than can be grown in Europe. The cost of cultivation here would also be less than in Europe; for, in the first place, the land costs nothing here, and in the second place, it requires little or no artificial enriching. There is also a decided advantage in the intense heat of our summers which would allow the roots to be dried in the open air instead of by artificial heat, which injures the coloring principle. The madder consumed in this country, annually, amounts to nearly $2,000,000. This amount, if madder was grown here, would go into the pockets of our farmers, and would do more than any thing else to eradicate *their prejudices* against American calico. Not only that. It is our conviction that it would be found that madder could be cultivated *so much* better and *so much* cheaper here than on the worn out lands of Europe, that in a few years we should supply Great Britain, Germany, and even France herself.

We enclose a list of such prizes as we think would awaken attention, and stimulate invention in our branch of industry. We also send a list of the printing establishments, of the correctness of which (owing to the constant fluctuations in this business) we cannot vouch, nor are we able to give the annual production of each with anything like accuracy, without an application to each printer.

We shall always be ready to render any assistance in furtherance of the laudable objects which the Institute has in view.

We remain, Dear Sir,

Your obed't serv'ts.,

J. DUNNELL & CO.

We recommend, as the best mode of stimulating improvement in calico printing, the offering of a series of valuable prizes, as follows, and continuing them from year to year until the requirements are fully and satisfactorily answered, viz:

$1,000 for the production of 100 hhds. American grown madder.

A gold medal, worth say $100, for an improvement in the present mode of dying, whereby the *durability* and *lustre* of the dyes shall be increased, without materially increasing the cost of production.

$500 for the introduction of a new tissue, all wool, or cotton and wool, and woven by machinery, which, when printed, shall not greatly exceed in cost the cotton and wool de laines now made.

A gold medal for the discovery of a process whereby "steam colors," as they are called, shall be rendered less fugitive than at present, without enhancing the cost or lessening the brilliancy of the colors.

IMPROVEMENT IN COUNTRY RESIDENCES.

The Rensselaer county Agricultural Society have made a praiseworthy movement in reference to this important matter, as will be seen by the annexed report, which they request to have inserted in our volume of Transactions.

To the Executive Committee of the Rensselaer County Agricultural Society:

Your committee appointed by this society pursuant to the following resolution adopted by the executive committee, May 14th, 1850, as follows:

Resolved, That a committee be appointed to enquire into and report upon the expediency of the "Rensselaer County Agricultural Sceiety," granting or awarding premiums on residences, country seats, or gardens, or for beautifying and adorning the same, and that a committee report a suitable plan for the consideration of the Society in relation thereto would respectfully submit the following report:

That the deep and abiding interest which has for years been exhibited by the membersof this society in agricultural improvements, is not confined to that subject alone. It has not only extended a generous and liberal patronage to the honest tiller of the soil, to the industrious and laboring mechanic, to the daily toiling manufacturer by the side of the flowing stream, or the pondrous steam engine, but has likewise extended its beneficent and fostering care to the "Fine Arts" as well as to the Florist and Culturist, and they too have, by their untiring exertions, improved the knowledge of the "Arts," and of the science of gardening in all its departments, and the skillful artisan has introduced newly invented implements into general use. Thus we see that the various branches of the industrial pursuits of the country receive the attention which they so eminently deserve.

The subjects embraced in the resolutions have attracted the attention of those whose affections for "hearths, homes, and rural scenery," render them the advocates as well as the admirers of "beauty and style," as illustrated by the beautifying and adorning of the homes of their childhood, or of their maturer years.

The time has arrived when "country seats" are and have become fashionable, and "fashion rules the world." People begin to view with pride and pleasure the fine grounds and gardens of the tasteful farmer, who has had the foresight and sagacity to improve and cultivate his grounds, and to give the appearance of his dwelling an air of comfort and enjoyment, which is so delightful to the beholder as well as to the occupant.

The love of rural life is rapidly gaining ground in this country. People prefer to enjoy the delights of the country during the summer months, and to breathe the air of heaven free and clear of the dust of cities. We speak only of those who are deprived of the blessings of the gifts of nature which the rural population enjoy, who strive to cultivate the home feeling and multiply the objects of attraction and comfort in the "country residence," well knowing that the quiet and resistless beauty of a sweet country home is most favorable to the development of the good qualities of the heart. It improves the mind, invigorates the body, and gives to the human constitution vigor and elasticity.

Your committee cannot too much admire the refined and cultivated tastes of the gentlemen of this county who have led the way in "rural improvements." We owe them a debt of gratitude, and we hope soon to see the beneficial effects of their noble example.

The spirit of useful improvement is onward. We see it most aptly illustrated in agricultural and horticultural developments. The taste once created knows no bounds. Those who love to see the productions of the farm, likewise love to see the elegant and spacious mansion. A well arranged and laid out garden, as well as ornamental trees, with all the luxuries that appertain to a well arranged "country seat."

It may be urged that "country seats" are expensive, and but few of our farmers can afford the expense of such an establishment. This, in the main, may be true, but the beauty of a "country seat" consists in the trees, shrubs, and grounds, which, if arranged with the least regard to beauty or utility, are of themselves the sum total of an establishment. Forest trees cost the farmer little or nothing—shrubbery is not expensive, and two or three acres of ground appropriated for the house, yards, garden and flowers, or orchard, will yield more in value of fruits and vegetables than any other portion of the farm.

Your committee are of the opinion that this society cannot in any manner, better promote the cultivation of choice and superior fruit, than by the encouragement of rural tastes and rural refinement. Few people, after having taken pains and exerted themselves to plant trees and shrubs and beautify their grounds, will quietly neglect their garden, or the fine vegetables which are so easily raised, for they are too tempting to the palate to be neglected. The person who has a taste for the beautiful, has an equal relish for the good. It only needs a little time to fit up the grounds around the dwellings of the farmer beautiful and tasteful in their appearance, wearing an air of comfort and luxury which would well repay the owner for the slight care and attention bestowed upon them. In a country like ours, it is the duty of all those engaged in agricultural pursuits to add something to the beautiful as well as to the useful departments of agriculture.

No class of men have an equal right to be as proud as the farmer. He serves no man; for him God has given "seed, time, and harvest;" if one crop fails another is unusually abundant; he knows no want; the earth produces in abundance the good things of this life, or the means of procuring them. With a little care, prudence and industry, his table can be supplied with all the delicacies of the season, and all that the country affords.

The artisan, whose life is spent in the dense and crowded cities, without so much as to look at the green fields and gorgeous forests, invents and puts into practical operations all the improvements which the heart of man can wish, to aid the farmer in his avocation. No class of men can boast of being as well supplied with useful implements in their business as the farmers. Ingenuity seems to have exhausted its resources, as it were, in inventing labor-saving machines and implements for the farmer's use, and it would seem as if not half the labor is now required to cultivate the same amount of land as formerly.

All improvements should, as far as they are useful, be adopted and engrafted upon the original implement or design, and thereby improve and perfect the whole.

To improve, not to destroy, is the object of all useful inventions. No body of men know as well as the farmers that all radical reforms are not improvements, and the farmers are a class of men not easily humbugged, and if they should be, woe to the source from which the humbug cometh.

What should the farmer do in return for the artisan, whose life is wasted by anxious and ceaseless toil, and who is shut out from rural blessings? We answer—do his duty to himself; it is all that is asked or required of him. We claim it to be the duty of every man who is a farmer, to plant fruit and ornamental trees, to cultivate and grow the vine, as well as all useful vegetables; to beautify and adorn his grounds and garden with flowers, plants, and shrubbery, and so arrange his yards and grounds as to give his habitation as Eden like appearance as possible. Should our farmers be thus true to themselves and dutiful to nature, then with truth of our country it might be said in the language of the poet—'Tis

> "the land of the myrtle, the cypress and vine,
> Where all but the spirit of man is divine."

Nothing is so attractive to the traveler as the fine "country residences." They are something for the eye to feast upon. They please the imagination and cheer the heart, and bring with them all the associations of happiness and home. "Country seat" gives value to the farm upon which it is situated.

One blessing follows another. Sociality, refinement, and learning follow in the train of rural improvement. The mind keeps pace with the outer man, and the love of the beautiful in nature inspires the mind with the love of the useful and the good. It stops not there; it teaches the mind "to look from nature up to nature's God."

Your committee would therefore recommend the adoption of the accompanying resolutions by the Society:

Resolved, That the Rensselaer county Agricultural Society, for the purpose of giving encouragment to those who will "beautify and adorn" their "country seats," hereby establish an award on "country seats," including dwelling, grounds, gardens, trees, and shrubbery, and will, in the annual report of this society to the State Society, recommend the publication by the said State Society of the drawing and description of such "country seats" as the society shall by their committee deem advisable.

Resolved, That a committee consisting of five members of this society shall be appointed in the same manner as other committees of the society are, to be called "a committee on country seats," whose duty it shall be, at each annual Fair, to examine and report upon all such drawings and description of "country seats" entered for competition. Said committee in their award shall designate the name of the "country seats" entitled to the honor of said recommendation to the State Society, and shall likewise award said successful competitor each a diploma and a copy of the Transactions of the State Society and of the American Institute.

Resolved, That any person, a member of the "Rensselaer county Agricultural Society," owning or having an interest in any "country seat" in this county, who shall on or previous to the first day of each annual Fair, make or cause to be made an accurate drawing and description of such "country seat," and file the same with the Recording Secretary of this society, shall be entitled to compete for the honors above specified.

All of which is respectfully submitted,

JOHN FITCH,
HORACE HERRINGTON,
JOSHUA S. LEWIS.

Troy, July 9th, 1850.

PROGRESS OF TEA CULTURE IN THE U. S. STATES.

Greenville, S. C., Golden Grove Tea Plantation,
August 12th, 1850.

H. Meigs, Esq.,

Dear sir: I have not had the pleasure of hearing from you for many months, and know not at what point of the new organization of the Am. Institute you are to be found. I am always glad to hear from you. Know, that since the arrival here of my last tea plants, in beautiful condition, the first week in June, from the Northern part of China, I have spent the chief part of my time upon my tea plantation, and am pleased to inform you that the plants and seedlings are coming forward satisfactorily. These are the first tea plants I have received direct from China in sound condition. It has taken two years to learn the art of importing tea plants from so great a distance. The plants which I brought from London in '48, are now in strong and most prosperous growth, and require but very little attention from my hands. The chief labor is subduing the weeds and keeping the garden clean. This location is so far superior to the old one in the village that I have quite abandoned the idea of putting out any more plants there, or of planting any more tea huts, but devote my whole force to the plantation at the grove. I have received two parcels of nuts from different parts of China, and planted them in June. I have now a pretty good additional supply of tea nuts, far more than all I have before received, on the way from New-York, since the last of July. I hope to receive them next week. If they germinate tolerably well, I shall have a great increase of productive plant to my stock. The plants in the village, reduced from various casualties to about 80, are now coming into blossom bud, and were it not for the hope of gathering seed from those plants this year, I should remove them to this place, but as I think they will now stand any weather, shall probably let them remain another year, and if I am disappointed in my expectations, transfer them early nèxt spring and concentrate the whole at this place. During vacant time I have occupied myself very agreeably in improveing my farm. My small crop of corn, oats, buckwheat, mind the cakes, peas, beans, &c., all designed to supply the establishment, look well, and promise a sufficiency for my objects.

It would do your kind heart good to see my fruit trees loaded with apples and peaches of choice varieties. I save the fruit and make it available to some good purpose. I have just finished a cider mill, and purpose beginning to manufacture in a day or two the summer fruit and follow it up as the autumn fruit ripens. I planted out, during winter and spring, as choice a collection of all kinds of fruit trees as I could find in the country from Long Island to Carolina, and shall probably have as fine a fruit orchard of pears, peaches, plums, apricots, nectarines, almonds, quinces, damsons, cherries, strawberries, &c., &c., as can be found in this part of the country. Among other things I have three African dates, fifteen English walnuts, forty-one Spanish chestnuts. I intend to replant the two latter this autumn upon a plantation unoccupied for five years. I find plenty of work; I have a good farm-house, besides out-houses, in which I can sit and overlook the growing fruits and labors of one year's work. My tea field here is a valley running north and south, and the center of that valley I have trenched 1,400 feet, three feet wide and two deep, with a descent from the northern reservoir of water to the southern of twenty feet. This trench I divide by dams about 100 feet asunder, and thus have an ample supply of water running three feet from the first row of tea plants, with sufficient capacity to irrigate the valley at pleasure. The chief part of the valley is bottom land, and sufficiently rich without the aid of manure at present.

The capabilities of this small plantation of about 300 acres is the most extraordinary. I should like you to see it. The people here know nothing but to plant corn and cotton, and have recently, so I hear, given out that the tea cultivation is a total failure. Why, they do not appear to know the difference between a tea plant and its cultivation from a saw mill. No one, or very few, understands or appreciates my undertaking, can enter into my views or appreciate the enterprise, or cares a pin whether it succeed or not, but rather looks with jealousy and contempt upon a blockhead dreaming of future results. None of these things move me one hair. I ought by this time to know something of my own business.

My kind regards to the gentlemen of the Institute.

The railroad from Greenville to Charleston by Columbia runs through my farm, is now going forward with great spirit for such a country, and will open great facilities for future operations.

Yours most sincerely,

JUNIUS SMITH.

17th August. My apple and peach trees are so loaded with choice fruit that I am obliged to convert the former into cider, and the latter into brandy, to save them from a total loss. The branches give way under the pressure of abundance. I have made 100 gallons of cider and 25 of vinegar this week and have filled all my casks and only just begun. I wish you could see and taste my fruit.

Yours, &c.,
JUNIUS SMITH.

Water and nutmeg melons in abundance of finest quality.
J. S.

Golden Grove Tea Plantation,
Greenville, S. C., Jan. 1, 1851.

Adoniram Chandler, Esq.,
Corresponding Secretary Am. Ins.:

Dear Sir—I am in receipt of your favor of 28th November, and am always glad to hear from the American Institute, and should be well pleased to hear from the individual members with whom I formed an agreeable acquaintance the short time I resided in your city.

My time and labors are devoted to the main object which brought me to this part of the country. My supply of tea nuts last year, 1849, was very short, and a large proportion of those received, together with all the tea plants, perished in transportation. Thus, to a casual observer, it would seem that all was lost. But I regarded the disaster as a trial sent as a matter of discipline to give force to a bended, not a broken bow. The apparent loss was a great and substantial gain. My attention was directed from modes of transportation, which this experience proved would not answer, to others, which I judged from reasoning, for I had no other guide, would afford greater security. I was correct in my views.

My instructions transmitted to China, were faithfully executed, and the three different methods in which I directed the nuts to be packed, proved perfectly successful; every package came to hand—one after a passege of 180 days from Canton to New-York—in admirable condition. The tea plants packed in China under the direction of a gentleman of great horticultural experience, arrived also, from the northern parts of China, in beautiful condition. These plants are all of the green tea species, of the first quality grown in the tea plantations of China, and were planted out on this place the first week in June. They have grown well for the short time they have been in the American soil, and look fresh, green and healthy. I began planting tea nuts about the same time. Some of black tea species, planted 5th of June, germinated first week in September, and are now fine, vigorous plants.

In order to test the climate, soil, and system of cultivation, I have adopted the plan of planting tea nuts every month, in varieties of soil and different temperatures of heat, as you will notice that I have no other guide but my own experience and judgment in adapting the cultivation of the tea plant to this climate, soil, time of planting, &c., &c.

All written authorities, in reference to the cultivation of the tea plant, relate to foreign countries, and do not afford any sure criterion for our government in regard to our own country. On the contrary, whenever I have followed advice and recommendation of foreigners, I have always been in error. It is for this reason that I am laboring to form an American system of planting and cultivating the tea shrub adapted to this country, not to Asia. If it please God to spare my life, it is my design to pursue the same system in regard to the curing of the tea leaf. The peculiar advantages which, it appears to me, our country holds out for the growth and cultivation of the tea plant are so great, that I think nothing should be omitted which tends to the formation of a more perfect system of managing the tea plant in this country, than any we can import from abroad, where the climate, soil, temperature, habits of labor, and the like, must necessarily be in some measure, if not altogether, of a dissimilar character.

My good success in a pretty large importation this year of tea plants and nuts, is gratifying, seeing it carries with it a handsome extension of my tea plantation, and enables me to supply with a more liberal hand, the demands of others, than I have heretofore been able to do.

Your agricultural report of 1848, I received, but none of a later date has been received. I should be happy to receive the following numbers or rather volumes. In the absence of a direct opportunity, please to leave them with Messrs. Cook & Smith, Wall-street, who will forward them to me.

Your obedient servant,

JUNIUS SMITH, LL. D.

VENTILATION.

The committee appointed by the trustees of the American Institute on the 3d day of May last, to whom was referred the subject of ventilation of steam vessels for river and sea navigation, respectfully

REPORT:

That they have had the subject under consideration; that they have examined sundry steam-vessels in regard to their condition in respect to ventilation. It appears that the close and crowded condition of the sleeping apartments, and the consequent impurities in the atmosphere of steamboats plying upon our rivers, and the dangerous currents of cold air to which their passengers are exposed while heated or sleeping, are generally known and are the subject of frequent complaint. But the full measure of the evils and its influence on public health, are not sufficiently appreciated. The universal discomfort, the frequent sickness and occasional deaths thus induced, are regarded by competent medical observers as causing directly and remotely a larger amount of mortality than is occasioned by the explosion of steam boilers.

Abuses of a similar kind in vessels engaged in the exportation of slaves from Africa in times past when that trade was permitted, induced the Parliament of Great Britain to legislate on the subject. It limited the number of slaves so that each one was allowed at least a space equal to his length and his breadth on the floor of the vessel. Moreover, when the slave trade was regulated, traders were permitted to carry only three slaves for every two tons. It is believed that this allowance is often exceeded in our river boats.

Mr. Gladston recently declared in the British Parliament that Mr. Jenkinson stated that under the act of Sir Wm. Dillon, "the mortality in slave vessels was reduced to three per cent." That in the Dutch vessels the mortality was from 5 to 7 per cent. That in emigrant vessels during the year 1848–49, the mortality was 5 per cent, nearly double Mr. Jenkinson's estimate for slave vessels.

In the sleeping cabins of many of the boats, there are generally placed on each side of the cabin and throughout nearly its whole length, three tiers of births, (one over the other) and in the centre two other ranges also, each of three tiers; the cabins usually being less than 18 feet wide. But in many boats there are two, and in some three, sleeping decks, one above the other, the upper decks receiving the foul emanations of the lower, not from the lungs and persons of the crowded passengers alone, but also from numerous and oftentimes smoking lamps. Thus it appears passengers, among whom are children and invalids in search of health, are crowded more closely than the slaves were permitted to be packed under the act of Parliament, for if laid upon the floor each passenger would not have his length and a breadth of 18 inches; thus he has not even the slave's allowance. The number of passengers permitted to slave vessels according to their tonnage is, it is believed, often exceeded in our river boats.

The committee see no reason to doubt that the mortality in our night river boats would be as great as in slavers sailing under the old regulations, if the passages were as long as from tho coast of Africa to America.

Your committee believe that abuses such as thus shown should not be permitted longer to pass unnoticed. Many of these evils are capable of being remedied by adequate ventilation. There is a limit to the crowding together of human beings, beyond which, in spite of all the known principles of science and the best appliances of art, all comfort is destroyed, and life endangered. This limit, it is believed, is passed in many of our public assemblies and in our steam vessels. This is a matter which legislative action alone can remedy.

On the river where steamboats first floated, at the port whence they first put out to navigate and cross the ocean, it is proper that the reform should commence, and that the American Institute, the fostering mother of the arts, should assume to direct the attention of scientific engineers and skilful artisans to this important matter.

There are two aspects in which this subject is to be viewed. 1. Its principles. 2. The application of them. The supply of pure air requires the removal of that which has been breathed or rendered impure by combustion or exhalation from crowded persons or other sources. The principle upon which all ventilation is effected is, first, that of the horizontal movement as in winds or by the passage of vessels through the air; and, secondly, of the vertical movements depending upon differences of specific gravity. The first cannot be relied on as it fails in calm weather and in steam-vessels when they are moving in the same direction and with the same velocity as the wind.

The difference in the specific gravity of heated and impure air is always sufficient to produce motion of the air, and furnish adequate ventilation. An erroneous idea prevails with many persons, that an increased proportion of carbonic acid gas, which is very heavy in comparison with atmospheric air, being emitted in expiration, the air expired would be heavier than pure air. This is erroneous inasmuch as the expansion by heat, of the expired gases, more than compensates for the small additional per centage of the heavier element. In their own smoke flues and in the heat of their fires, steamboats possess a most powerful and most effective means of ventilation, depending upon the principles of the greater lightness of heated air. The foul air of their cabins and rooms is pure enough for their fires and may be readily drawn out to supply them.

It is not the province of the committee to enter into details as to the modes by which ventilation may best be effected; they content themselves with pointing out some of the most prominent defects of the arrangement on board of steam vessels.

1. The air of the lower cabins is discharged into those above.

2. There is no adequate means for the entrance of air independent of that designed for the discharge of it.

3. Air is admitted by windows opening upon the berths, to the great danger of those who occupy them.

4. Or it is admitted in large quantities, injurious to the health of those exposed to it.

The desideratum is to admit air through small apertures so as to create no dangerous currents, and to provide for its exit through independent escape flues, one or more for each deck, and to have the lights under small tubes to carry of their smoke and vitiated air.

Your committee therefore, respectfully recommend that the American Institute should encourage the improvement in better ventilation of steam vessels, and for such purpose it is expedient to offer a gold medal for the best plan of ventilation for steam vessels with models or adequate drawings, and which shall be found effective for the object and which shall be approved of and adopted by the Institute.

All which is respectfully submitted.

ALEX. H. STEVENS,
JAMES TALLMADGE, *Committee.*
JAS. RENWICK,

American Institute, 18*th May*, 1850.

AGRICULTURAL INSTRUCTION.

New-York, 35 City Hall Place,
December 6*th*, 1850.

My Dear Sir:—

I have so often, in the appropriate time and place, expressed my opinion in as strong terms as possible, of the necessity which exists for the establishment of an institution for the encouragement of practical agriculture; and so much has been better written and said by others, to the same effect, that I fear but little force or novelty belongs to the views herein submitted. Such as they are, however, I hope they will contribute something to the concurrent testimony of all enlightened men interested in agricultural improvement, and I place them accordingly at your disposal.

The necessity for some means to assist the progress of enlightened agriculture arises out of the following considerations:

1. The great extent of country involving a climate and soils capable of growing almost every edible production.

2. The condition of our agriculturists; the nature of their calling necessarily precluding them from seizing the best opportunities for making themselves acquainted with the highest condition of their art.

3. The backward condition of the philosophy of the science as connected with this country; the great dependence which this country, in theoretical matters, places upon European data.

1. That there are particular zones of the earth best adapted, from their annual mean temperature, for the sure growth of certain plants, is an admitted fact. This limit is not sufficiently well understood, nor well defined in practice at present. The physical geography of the State, as far as its capability of growing plants is concerned, requires more careful study and observation, not merely with regard to what it does at the present time sustain, but also to what it is capable of supporting. There are many valuable vegetable productions indigenous to the eastern hemisphere, which might be made to flourish on our continent were the climate and habitats peculiar to them carefully studied.

The study of our soils, in connection with climate and zones, of vegetation, is only in its infancy. Climate being the same, a variety of soil produces a different vegetable growth. This is shown in a very marked manner in the vintages of the Rhenish provinces, where the vines in one vineyard will differ in flavor from those of the neighboring yards, owing to a variety in the soils.

The occupation of tilling the soil is exerted so laboriously on the physical frame of the agriculturist, and the whole of his time so absorbed in the pursuit that he has but little to spare beyond the hours of rest. He thus has frequently but little time and leisure to make himself acquainted with the progress of this art in other countries, and even in his own State and country he is often in equal ignorance of what improvements intelligent cultivation is producing, owing to his being in that profession which of all others travels least. The farmer of all others, knows least of what his brethren are doing, and he requires not only that some one of experience should occasionally communicate to his neighborhood the apparent improvements in practice recommended, but also, that such an one should do it with that amount of skill and provision that would ensure remuneration, or prevent loss whenever it might be carried into practice.

The early period of life at which many young men commence to farm, prevents them having the advantage of seeing the better practice and more enlightened experience of our intelligent cultivators; and since this is a practice not likely to be altered in this or the next generation, it is desirable that some opportunity would be afforded whereby in one spot might be found concentered facilities for observing good practical agriculture, for learning the theory of their art, and for perfecting themselves in general education. Even a single year spent by a youth at such an institution would exercise an important influence upon him in all his after conduct upon a farm. It would render him more alive to the importance of an agricultural education for an agriculturist, and give him that tone of mind which would induce him to adopt acknowledged improvements.

Notwithstanding the various geological surveys carried out so extensively in many of the states, and in none more so than this, yet it is remarkable that much of the information contained therein has not reached or influenced the agricultural community. The points of distinction between American and European soils have not been fully contrasted. Nor has the difference which a varied climate and latitude exerts upon soils of a like chemical and physical character, been much attended to. This is to be lamented, for without attention to this particular, great errors may be fallen into. It may occur occasionally thus. European agriculture being more advanced, and a greater number of ascertained facts existing there; these facts may be assumed *to be true and applicable here*—a very erroneous assumption. The error of adopting chemical analysis of one country's crops as being the true analysis of the crops of other countries, is now fully exposed, and it is only by a series of well conducted analyses, prepared under varied circumstances of climate and soil, that at last there can be arrived a *general formula*, which will express without error what the constitution of any plant may be. Once the general formula is obtained, the *special formula* of any locality may be estimated from its soil.

Another instance occurs with regard to the use of lime. This mineral exists very abundantly in the soils of western Europe, and without its presence in a marked quantity, the cereal plants do not flourish. In Britain it is a common impression that soils which contain less than three per cent. of lime will not raise wheat crops remuneratively, and hence the rule in practice to bring the quantity of lime as near as possible to five per cent. by artificial addition, to form a good wheat soil. Such a recommendation would, in this country, if followed into practice, be not merely useless, but injurious in its result. In point of fact, we find luxuriant crops of wheat growing upon soils containing less than one per cent., and this is the character of some of the finest wheat lands in this State. This absence of lime is not peculiar to this State. Throughout the whole Union, as far as is examined, the proportion of lime in the soil is very much below the European standard, and as abundant crops are harvested, it is not required. Hence the error which would ensue from adopting an European maxim.

Solar heat in lower latitudes appears to effect what lime does in colder and more humid regions; and the influence of this element upon our soils, not merely in decomposing organic matter more rapidly in the soil, but also its power of pumping up nourishment from the saline matters of the sub-soil by capillary action, deserves more study than it has obtained. We should never forget that if the sun's rays are capable of making a garden out of a cold marsh, they are also capable of making a fertile region a desert. Their influence requires to be husbanded and controlled by turns, and to do this, their influence requires to be studied.

The "balance of nature," as it is now termed, deserves the anxious attention of the agriculturist: the relations which earth and air, light and heat, water and electricity, bear to the growth of esculents, the rearing of stock, and the support of man, are the great points requiring attention and investigation to be pushed further than heretofore.

This the agriculturist cannot do; he has neither the time nor the means at his disposal. It requires the co-operation of experimental science; and it is too much to expect the physicist, the chemist, and the geologist to devote their time to aid in the solution of questions, which however interesting in the abstract, yet from their occupying considerable time, draw away from the means of subsistence.

These questions of importance to the agriculturist, will be neglected, or their prosecution deferred, unless an institution be set apart for the special purpose. The endowment of an Agricultural College, with an Experimental Farm annexed, is the great means of supplying these wants. In such an institution, the points alluded to might be satisfactorily resolved, and their bearing extended. The relations between the soil and the plant here be truly determined, as far as regards this State.

The establishment of an Agricultural Bureau at Washington, as recommended by the President, by no means would diminish the necessity for an educational Agricultural College and an Experimental Farm for the State of New-York. The business conducted in the latter, should have for its object solely the development of the agricultural resources of this State. The New-York farmer is now almost placed between Scylla and Charybdis; he has to compete with the south and the west: with the early vegetation of the former, and the cheap production of the latter. Competition he cannot escape; and the only means he has to oppose his antagonists is to stimulate the productiveness of his ground to its *ne plus ultra*. Here the aid of science is invoked, here is the necessity for an Agricultural College.

I am, my dear sir,

Yours, very respectfully,

THOMAS ANTISELL.

To A. CHANDLER, *&c.*, *&c.*,

American Institute, N. Y.

TRIAL OF FIRE ENGINES.

TROY, N. Y., *Jan.* 28*th*, 1851.

GEN. CHANDLER:

Dear Sir—Enclosed I send to you a report made to the Executive Committee of the Rensselaer County Agricultural Society, by the committee appointed for the purpose of witnessing the trial of fire engines at our late County Fair. I would ask for the report an insertion in the next volume of the Transactions of the American Institute. We think it to have been the finest effort of the kind ever witnessed in this country, and that no other engine ever came up to the effort of No. 13. The trumpet awarded was a beautiful specimen of art.

Yours, &c.,

JOHN FITCH,

Cor. Sec. Rens. Co. Ag. Society.

REPORT.

To the President and Executive Committee of the Rensselaer County Agricultural Society:

Your committee on the trial of fire engines beg leave to report: that there were nine engines entered for competition; seven from Troy, and three from Lansingburgh, as follows:

Troy.	Foremen.
No 1,	W. C. Dauchey.
Washington Volunteers,	J. H. Congdon.
No. 7,	Chas. Dummery.
No. 8,	Wm. Flack.

Troy.	Foremen.
No. 9,........	J. H. Allen.
No. 10,............................	G. M. Capron.
No. 13,............................	J. Ostrander.
Lansingburgh.	
No. 2,............................	Edward Mercer.
No. 4,............................	John McMurray.
No. 3,............................	A. C. Burges.

The trial of each was made in the order above, except No. 9, which was by a vote of the fire department ruled out in consequence of some change made in their pumps, after coming on the ground. And also No. 3 of Lansingburgh, which did not enter for competition, not being a full company.

The trial was made according to the rules adopted by the fire department, and assented to by your committee, with the following results:

Each engine, in its turn, was placed on a platform at the river, throwing the water through 300 feet of hose into a tank prepared for that purpose, more than 23 feet above the platform. Each company of 75 men working their engine 8 minutes, when the water thrown into the tank was measured, the time and measurement being accurately marked by your committee.

Each engine filled the tank as follows:

No. 1,............ ...	38 inches,	measuring	1,748 gallons.
Washington Volunteers,	$41\frac{1}{4}$ do,	do	1,897 do, 2 qts.
No. 7,................	42 15-16th,	do	1,975 do, 1 qrt.
No. 8,................	$43\frac{7}{8}$ inches,	do	2,008 do, 1 qrt.
No. 10,..............	$42\frac{3}{4}$ do,	do	1,966 do, 2 qts.
No. 13,..............	45 7-16ths,	do	2,090 do.
No. 2, Lansingburgh,..	$42\frac{1}{4}$ inches,	do	1,943 do, 2 qts.
No. 4, do, ..	35 do,	do	1,610 do.

No. 8 met with an accident and an intermission, caused by some portions of the platform giving way, after they had played two minutes, and after playing five minutes, an accident happened to their engine which caused the company to cease playing.

No. 4 of Lansingburgh, met with an accident in breaking some planks on the platform, at the river, which lowered one side of their engine so much that it could not be worked to its greatest capacity.

The two companies from Lansingburgh being the next to experiment, labored under some disadvantage in consequence of a severe shower, which continued during their whole performance.

The trial through the pipe for the second premium, was dispensed with for the present by a mutual agreement of all the companies, in consequence of the bursting of six pieces of hose on the two first trials, it being found that there was no hose on the ground which would stand the pressure of water when the engines were worked by the full force of the company. New gutta percha hose was tried, and gave way almost immediately.

On Saturday morning, engine company No. 9 brought their machine on the ground, and worked under the inspection of a part of the committee, playing through the same hose from the river into the tank, for the same time, eight minutes, with the following result—44½ inches in the tank, and 2,047 gallons.

The committee award the first premium to No. 13, Jonathan Ostrander, of Troy, for having thrown the greatest quantity of water from the river into the tank, being 43 gallons over the next highest, No. 9, and 82 gallons over No. 8, and 480 gallons over the lowest.

The committee will make a further report on the machines, as to the capacity of pumps, length of stroke, &c., as soon as convenient.

On Saturday afternoon No. 4, of Lansingburg, which broke through the platform the day previous, played through the same hose into the tank, and filled it to $37\frac{3}{8}$ inches, an increase of $2\frac{3}{8}$ inches on the day previous.

FRANKLIN TOWNSEND,
PETER ROWE,
A. VAN TUYL,
G. M. SELDEN,
JOHN FITCH,
Committee.

REPORT OF THE COMMITTEE OF ARTS AND SCIENCES OF THE AMERICAN INSTITUTE,

On the pamphlet entitled "Description of the causes of the explosion of steam boilers, and of some newly discovered properties of heat, &c.," by James Frost, and on the experiments and theories therein described and set forth.

After perusing the said pamphlet, several members of the committee proceeded to the residence of Mr. Frost at Brooklyn, where they carefully examined all the apparatus devised by Mr. Frost, for the illustration of his theory, witnessed a number of his experiments which he performs by means of them, and assisted at the trial of an engine propelled alternately by steam generated in the usual manner, and steam heated after being generated, out of contact with water.

In respect to the apparatus, they report that it is planned with much ingenuity, and upon principles which admit of no doubt as to the accuracy of the results exhibited by experiments performed with it. These results will be hereinafter spoken of in detail. In respect to the engine they found a very marked and decided superiority in the measure of the work performed by it, when the steam was heated after being generated. In the abscence of those members of the committee practically skilled in the action of steam engines, however, they do not venture to assert that the principles upon which the engine acts when propelled by steam heated after being generated, is certainly capable of convenient application to the steam engine. Enough, however, was obvious to them to enable them to report that the principle is in itself true, and that the application of it to practical use is well worthy of careful investigation.

The experiments described by Mr. Frost, of which a sufficient number were witnessed by the committee to enable them to assert that there is no reason to suspect any fallacy in their results, may be divided into two classes:

1. Those by which the expansive force and tension of steam, heated after being generated, to which, in the remainder of this report, the name of dry steam will be given, and determined: and

2. Those by which the relations of dry steam to sensible and latent heat, are investigated.

In relation to the experiments of the first class, it is proper to premise, that previous to the publication of the experiments of Mr. Frost, it was held and admitted by all scientific men that the vapor of water and of all other bodies did, like atmospheric air, obey the law known by the name of the experimenter who first investigated it, Guy Lussac; and did, in conformity with that law expand $\frac{1}{480}$th part of their volume at the temperature of freezing water, for every increase of 1° of Fahrenheit in their temperature. The accuracy of this law, after being received universally for near half a century, has recently been called in question, even in its application to the gases, the experiments under consideration seem to show that it is very far from being true in dry steam. Guy Lussac appears to have been too hasty in admitting the universal application of his law; and even in the cases whence he derived the inference that it was true of a vapor of water, his experiments, as far as your committee have been able to ascertain, did not extend to the particular points which have been the chief subject of Mr. Frost's investigations. The published results of Guy Lussac, derived from his experiments on the vapor of water, extend from 32° F. to 212° F., and, therefore cease exactly where Mr. Frost's begin. There is, therefore, in reality, no received law to be set aside. That of Guy Lussac remains unchanged, although restricted by the limits of the experiments on which it is founded; and any other law determined by experiments beyond these limits, is not in opposition to, but an extension of his law. It has been considered important that these fact should be stated, inasmuch as the investigations of Mr. Frost might be rejected without examination, as contrary to a well established law of nature, were it not clearly shown that this law has been too far generalized.

By means of various apparatus, fully described in his pamphlet, Mr. Frost has obtained the following relations between the volume, temperatures and tensions of steam, heated out of contact with water:

Temp.	Volume.	Tension in inches of Mercury.
212°	1	30
216	2	32
228	3	34
450	4	36
600	6	40
650	7.37	42.75

Whence it may be inferred that the volumes under the pressure of a single atmosphere, and the tension under a constant volume, would have borne the following relations to the temperature:

Temp.	Volume under pressure of 1 atmosphere.	Tension under a given volume.
212°	1	30 inches.
216	2.133	64 "
228	3.4	102 "
450	4.8	144 "
600	7.2	216 "
650	9.8	294 "

The experiments of Mr. Frost have furnished, in his opinion, complete proofs of the truth of the law of Mariotte, by means of which the relations in the last table have been calculated.

Mr. Frost next proceeded to measure the actual quantities of heat contained in steam generated from water boiling under different pressures, and in steam generated at the temperature of 212°, and heated afterwards out of contact with water. In the first of the two cases, he reaches the conclusion that "*natural steam, however varying in density or temperature, is one invariable atomic compound of water and caloric, and as definite as any chemical atomic compound whatsoever.*" This, when translated into more familiar language, is no more than the well-known law which has long been received as approximately, but not exactly true, viz, that *the sum of the latent and sensible heat in the vapor of water, whatever be its temperature or density, is a constant quantity.* Mr. Frost's experiments do not appear to furnish better grounds for considering this law as more than approximately true, than those of others; and to receive it as more than an approximation, is attended with difficuities which have so often been pointed out, that it is unnecessary to state them in this report. Upon this law, however, Mr. Frost founds an argument against the profitable application of high steam, on which head it is sufficient to state that on this very law is founded the reason why high steam can be employed with advantage; because the tension due to its increased temperature is obtained without cost. In respect to steam generated at 212°, and subsequently heated out of contact with water, Mr. Frost infers that the increased tension which has been exhibited in the tables above set forth, is obtained by the addition of comparatively small quantities of heat. Thus to raise the dry steam from a temperature of 212° to 650° and give it a tension of 9.8 atmospheres, requires no more heat than is to that which is required to raise water from a temperature of 50° and convert it into steam of the tension of one atmosphere, as 38 : 32. Upon this Mr. Frost founds a theory, that steam heated out of contact with water, becomes a new atomic combination "of water and caloric." We do not see that it is necessary to resort to this hypothetical mode of expression, nor is there any experimental evidence of a change in the relations of the aqueous matter to latent heat. All that occurs can be explained in language more familiar, and which, although also hypothetic, is so universally received that it may be used with as little risk of being misunderstood, as if it truly expressed facts. In this language the amount of the discovery of Mr. Frost may be stated, by saying that steam heated out of contact with water has a very low capacity for specific heat. Following out his own hypothetical views, Mr. Frost chooses to call his supposed new combination of aqueous matter and "caloric" by the name of *Stame.* Your committee are not of opinion that the use of such new name is of absolute necessity, and have therefore avoided its employment, particularly as the epithet *dry*, if applied to steam not in contact with water, is fully and sufficiently expressive of everything that is positively known, or which requires to be expressed in language by way of distinction between steam heated out of contact with water, and steam in contact with water whence it has been generated.

In expressing a difference of opinion from Mr. Frost, in relation to the law of the constancy of the quantity of heat in ordinary steam, and in respect to the necessity of a new name for dry steam, your committee do not intend to detract in the least from his high merit, nor from the value of the deductions he has made from his experiments. These deductions are of great value as additions to the theory of elastic fluids, and afford an explanation of facts and occurrences which no previous theory has reached. We have seen that an increase of the temperature of dry steam, from 212° to 650°, or little more than 400° increases its elastic force nearly ten fold, and that this increase of force can be attained by an expenditure of heat not greater than one-fourth of that by which the steam was originally generated. Can it be doubted that in this simple but hitherto unknown fact lies the cause of by far the greater part of the explosions of steam boilers. It is conceded by almost all who are competent to examine the subject, that the dangers which might otherwise accompany the use of steam generated in a boiler no part of whose surface is hotter than the water it contains, can be prevented by the use of the common safety-valve, and the very weakness of parts of a boiler, may prove a source of safety. On the other hand it is almost always possible to infer that there have been causes capable of heating some portion of the boiler to temperatures far above those of the water it contained, previous to all positive explosions. Now if an additional heat of 400° suffices to increase the elastic force of dry steam nearly ten-fold, how great might the increase of elastic force become, if the steam were in contact with incandescent metal, and heated from 1600° to 2000° above its normal temperature.

The low capacity for heat which has been found by Mr. Frost in dry steam, accounts for the fact that explosions arising from the cause we have referred to, are often preceded by a diminution in the force with which the engine works. It also enables us to explain how it happened that although the very action proposed by Mr. Frost, namely, the heating of dry steam, has been employed for many years in the " Steam Chimneys" so familiarly known, no very important advantages have been gained by their use. In this case the steam has parted with its temperature to the cylinder and steam passages just as rapidly as it has acquired it.

In this cause also we are to find the reason of the difficulties which Mr. Frost has experienced in applying the principles deduced by his experiments to the actual working of an engine. These difficulties he has overcome in an engine of small size, by methods extremely ingenious and sufficiently simple.

It should be considered that we know that incandescent metal may drive off water in globules, and that this incandescence is often produced in particular spots of the boiler, by means of an accidental high heat produced by peculiar arrangements of fuel and draught of air, and particularly where there is not enough of water in the boiler. In such cases an explosion may be the consequence.

It should also be considered that more of the metals than is usually admitted are capable of decomposing steam when intensely heated, and are thus oxidated. These considerations show that there must be difficulties or even dangers in the use of dry steam, and ought to be taken into account in any attempt to reduce Mr. Frost's principles to practical application.

JAMES RENWICK,
H. MEIGS,
HENRY R. DUNHAM,
Committee.

TRANSLATION.

[Communicated to the American Institute, by H. MEIGS, ESQ.]

Raspail's SYSTEM OF ORGANIC CHEMISTRY, *on circular polarization, employed as a means of distinguishing chemical species.*

Biot's very interesting inquiry on this order of phenomena, led to results that are incontestible. He says when a ray of light, polarized by reflection, passes across a tube full of any liquid, if it is viewed through a plate of tourmaline* placed perpendicularly to the course of the ray, it is found that it deviates to the right or left of the position which it occupied when the tube was empty; and then it is said that the liquid has turned the plane of polarization to the right or left. (Polarization of light is a modification of light after it has undergone certain reflections and refractions, which, as is said, give poles to the ray like those of a magnet, or *sides with the opposite properties.*) This deviation, whether to the right or left, increases with the density of the liquid and the thickness of its mass. This property, which was first discovered of Quartz by Biot and Arago, was called by Biot *polarization by rotation*, and by Fresnel *circular polarization.* The recent researches of Biot consist in the application of this law to the determination of Organic species. It results from them that the soluble substance of fecula (of the nature of starch) obtained pure, turns the plane of polarization upwards and *to the right*, more than any other substance. That sugar, whether from the cane, the beet, or the mallow, produces a like, but *less deflection;* but that gum arabic and grape sugar, from whatever plants obtained, turn the plane of polarization *to the left;* but when these are solidified they *turn to the right, and although again made liquid, will never again turn it to the left.*

These results are justly deemed very interesting, and strongly invite us to further research.

* The most perfect form of Schorl, a black, prismatic, brittle crystal, becomes electric by heat or friction, has much lustre. The ancients called it Lyncurium. Its chief components are Silica and Alumina, with about ten per cent. of Soda and a little Oxide of Manganese and Iron. The transparent colored varieties are sometimes made ornaments of rings, and this substance is valued on account of its importance in experimenting upon the polarization of light.

REPORT ON THE ATLANTIC DOCK MILLS.

The American Institute having received an invitation from Mr. Bronson, agent of the Atlantic Dock Mills Company, to visit their establishment for manufacturing various bread stuffs from Indian corn by J. R. Stafford's patent processes:

At a regular meeting of the Institute, held on the second day of January, 1851, the undersigned were appointed a committee for that purpose, and having performed their duty, beg leave to report the result of their examination.

The said mills are located on the northerly side of the dock, occupying the three story stone building numbered 17, 18, 19 and 20.

This establishment is probably the largest in the world engaged in the exclusive manufacture of bread stuffs from Indian corn, such as corn flour, corn farina, corn meal, and other varieties, by cracking, by grinding, by evaporating all moisture from the articles by proper steam heat, and by motion and ventilation during the drying process. All the machinery is admirably adapted for producing the said articles of excellent food. This drying process is by a moderate temperature which, while it suffices to drive out all moisture without the slightest injury, but gives peculiar sweetness to the taste which is not given by kiln drying.

These mills are able to prepare and clean the flour, the meal, farina, grits, &c., more perfectly than can be done by any other known process.

We noticed in the packing room, the several articles made from yellow and from white corn, put up in every variety of sized package to suit customers.

The whole business is conducted in so clean and methodical a manner as will give satisfaction to all those who use this delicious article of food.

Respectfully submitted,

HENRY MEIGS,
JOHN A. BUNTING.

January 20, 1851.

At the request of the committee we, the undersigned, examined the mills referred to in the above report, and we concur with the committee.

JOHN CLOWES,
R. L. PELL.

January 20, 1851.

REPORT OF THE COMMITTEE APPOINTED TO EXAMINE THE MANUFACTORY OF MESSRS CADWELL, PAYSON & CO.'S EXCELSIOR SOAP.

The undersigned, members of the special committee appointed on the request of Messrs. Cadwell, Payson & Co., to examine their manufactory of excelsior soap, situated at the corner of Rivington and Cannon streets, proceeded there on the 21st of November last.

The proprietors politely conducted them to all parts of the building, which is 100 feet long, 50 feet wide, and four stories above the basement; a six horse power engine gives the necessary power of elevating materials to the stories, stirring mixed material, cleaning the conducting pipes by blowing steam through them when necessary to clean them for oven heating, &c.: croton water throughout the building elevated partly by steam.

For boiling a kettle with plank upper containing 100 barrels. The soap is made in about one hour to the weight of 4,500 pounds. They make daily about seven tons with power if necessary to double that amount.

The committee do not feel at liberty to state the materials of the soap. They are enabled to say that the cost of one pound of the soap to the company is about one and an half cents.

The committee think it a very good soap when compared with other common soaps; is preferable in one respect, that it can be well used in hard or in soft water. In conclusion, the committee deems the excelsior soap a valuable acquisition to the community on account of both its useful qualities and its cheapness. It is likewise valuable from the fact that the main body of this soap is found readily in our country in inexhaustible quantities.

H. MEIGS,
GEO. F. BARNARD.

ANALYSIS OF SOIL FROM WESTCHESTER COUNTY.

GENERAL CHANDLER:

Dear Sir—Enclosed you will please receive the analysis of a surface and sub-soil from Westchester county, New-York. The farm from which this soil is taken lies adjoining the Harlem river. Accompanying the analysis is a copy of my instructions for its improvement, &c.

I remain yours, &c.,
J. J. MAPES,
Editor of The Working Farmer.

NEWARK, *Dec.* 20, 1851.

Dear sir—Some delay in the analysis of your soil has prevented my replying at an earlier date.

I am sorry to find that your soil owes so much of its fertility to the manures you have used, the results of which, by full cropping, have been removed, and the ultimate constituents remaining are not of such kinds as to give permanent utility, nor even maximum crops, by the use of stable manure alone; nor can that kind of manure be used alone with a due attention to profit.

I give below a table, arranged so as to enable you to compare your soils with those of known fertility, by which you can see at a glance what are the deficiencies of your soils, and thus be able to correct them, and render their character more permanently fertile.

All this may be done without any material expense, as compared with the increased crops of the first three years, beside rendering the soil so replete with proper constituents that the after manurings need be less in quantity, and consequently in cost, and thus for the first five years the expense for manures will be less than for the last five years, in addition to leaving the soil in a much better condition than it now is. The manurings for the five years commencing with A. D. 1855 will not cost one-third what you have probably expended from 1845 to this date for manure.

No.	*Constituents.*	*Soil fertile without manure.*	*Your surface soil.*	*Your sub-soil.*
1.	Organic matter,........	9.70	2.00	6.52
2.	Silica,..................	64.80	94.80	91.80
3.	Alumina, ...	5.70	as silicate of alumina, iron & lime,	
4.	Lime, ...	5.90	as sulphate,......... 20	24
5.	Magnesia,.............	90	04	08
6.	Oxide of iron,.........	6.10	with alumina, ... 1.87	1.62
7.	Oxide of manganese,..	10	none,	none.
8.	Potash,................	20	03	02
9.	Soda,..................	40	16	12
10.	Chlorine,..............	20	as common salt,	
11.	Sulphuric acid, ...	20	none,	none.
12.	Phosphoric acid, ...	40	none,	none.
13.	Carbonic acid,.........	4.00	as carbonate of lime, 90	40
	Loss during analysis,..	1.40		
		100.00	100.00	100 00

From the above, you will readily see that your soils have neither phosphoric nor sulphuric acids; and of lime, magnesia, potash, soda, and chlorine, the quantities are much too small. As the more simple method, I will give the remedies numerically:

No. 1. *Organic matter.*—You will readily see that at some time your surface soil has been plowed so shallow, for a series of years, that the organic matter is less than that now existing in the subsoil; and hence you can readily perceive that deep plowing cannot but be serviceable with your soil.

Although the quantity of organic matter has not run down as much as the inorganic matters, still, for gardening purposes, or even superior farming crops, the quantity is too small. It may be easily increased; and in so doing, the manure of your stables and others can be more economically composted.

This organic matter should be supplied by properly decomposing the black muck so largely deposited in low places in your vicinity. This black muck has been washed from the high lands during all time, and is highly valuable after proper treatment, both for supplying organic matter to the soil and as the recipient of the fluid manures of the stables, pig pens, &c., &c. Even the salt marsh, by being ditched, and thus improved, will furnish a suitable material.

This or any other organic matter may be rendered pulverulent and suitable for use by the following process, viz:

To make chloride of lime and carbonate of soda.—To three bushels of lime, (shell lime, if you can get it,) fresh from the kiln, add one bushel of common salt, dissolved in water. This will slake the lime—and it may be found difficult to cause the lime to receive all the salt water the first day; but by turning over the mass each day, the whole of the pickle may be added. This mixture should be turned once each day for a fortnight, so as frequently to expose all its parts to the action of the atmosphere. After this time a chemical change will have taken place, and the salt and lime will have changed to the *chloride of lime and carbonate of soda.*

Common salt is composed of *chlorine* and soda, and after its intimate admixture with all the *lime*, this last substance will combine with the chlorine, and thus form chloride of lime; while the soda, being set free, will take carbonic acid from the atmosphere, and become carbonate of soda. Commencing, then, with lime and salt, you will have resultant chloride of lime and carbonate of soda, which I will call, for the future, *decomposing powders.*

The muck should be dug some time before it is required for use, and thus it will have time to drain itself of excess of moisture, and be lighter to cart. If dug in the fall, or during the milder parts of winter, the frequent freezings and thawings will leave it in a fine pulverulent condition by spring.

Prepared Muck. To each cord of this muck add four bushels of the *decomposing powders*, and in 60 days in summer or 90 days in winter, it will decompose all the roots, &c., and leave the mass light and powdery.

A large stock of this prepared muck should always be on hand, near the stables, barn-yard, pig-pens, &c., ready to be used in composts, &c.

Properties of prepared Muck. Muck so prepared contains nearly the same ingredients as cow manure, and for some crops is fully equal to it, without any further admixture. This is peculiarly true when used for raising potatoes; I have raised very large crops with this manure alone.

Prepared muck has peculiar powers for retaining those portions of manures mixed with it, which under ordinary circumstances are volatile. Thus equal bulk of night soil and prepared muck when mixed together, are inodorous; all the volatile manures, such as guano, &c., if previously composted with prepared muck for a month, may then be applied to the soil and will remain until used up by growing plants, instead of escaping from the soil in a single season, by evaporation, all the more powerful manures may be used safely when previously mixed with prepared muck.

Manure heaps which are fermenting and throwing off large portions of ammoniacal and other gases will cease to do so when covered with prepared muck, all gases will be absorbed by the muck, thus rendering it equally effective, as manure, to the rest of the covered mass.

When placed under the bedding of cattle, it absorbs the liquids, and retains the volatile matters which may be removed to the manure sheds every ten days and replaced by seven half cords; and thus the whole be converted into effective manure. In other words, the amount of urine voided by six oxen in 10 days is entirely sufficient to put seven half cords of prepared muck into a state of fermentation, after passing through which the muck is an efficient manure.

The solid excretiæ of animals when composted with 18 times their bulk of prepared muck, will be found to cause the whole mass to ferment, and thus render the whole suitable for manure.

Cattle yards and pig pens should be freely supplied with prepared muck, and thus all the fluid and volatile portions would be saved, if taken up and housed or covered with a roof of prepared muck, to receive the excess gases, when too small a portion of muck to retain them, is mixed with the excretiæ.

By liberal use of this article, you will not only render all other manures more lasting, but will, at the same time be adding the necessary amount of organic matter to the soil. Three cords of prepared muck added to an acre of ground, will supply more organic matter to the soil than would be furnished by the ploughing in of a full crop of clover. Whereas, when applied unprepared, it only acts as a divisor and does not supply the requirements of soluble organic matters. A soil once fully charged with this material will ever after be capable of re-supplying itself with the organic constituents of the atmosphere, like an old garden soil.

Chemical value of the Decomposing Powders.

The decomposing powders used in the preparation of the muck (chloride of lime and carbonate of soda,) will assist in adding to the soil Nos. 4, 9, 10, and 13, and this too, in addition to their use in the decomposition of the muck.

No. 2. As other ingredients are deficient, the silica is in excess, and only requires division by additions of organic matter, as recommended above, to make it more retentive of both moisture and manures.

No. 3. Your soil is not deficient of alumina, although the free alumina is not large, its amount of silica of alumina is full.

No. 4. Lime is deficient in your surface soil, a large portion of what has been previously used being now resident in the subsoil. Lime always sinks rapidly from surface into sub-soils when the surface soil is deficient in organic matter.

I would not advise the addition of lime except before or after the addition of organic matter, but not at the same time. Much lime may be added in the form of sulphate of lime, (plaster of paris,) but this should find its way to the land through the stables, as plaster sprinkled freely about cattle stalls, barn yards &c., absorbs and retains large quantities of ammonia and other volatile matters which would otherwise be lost.

The free use of plaster of Paris will also assist to supply No. 11, (sulphuric acid) of which the soil has *none*, and without which many plants cannot fully succeed.

Much lime will also find its way to the soil from the decomposing powders of which it forms a part. When your soil shall have received a sufficiency of decomposed muck you may add lime with an unsparing hand; but when added in great excess to soils deficient in vegetable matter it causes great loss of the more volatile constituents.

No. 5. This need not be artificially added unless yon can purchase a quantity of soiled or damaged Epsom salts, in which case it may be added, as the sulphuric acid contained in the salts would probably be worth to you what the whole would cost; 100 lbs. of this material, at a cost of 1½ cents per lb. would be a judicious application; but it should reach the soil through the manure heap. Those who use stone lime find it to contain enough magnesia for the necessary supply but its presence in large quantity is deleterious, and in moderate quantities is readily obtainable.

No. 6. Of oxide of iron, you have enough as it pervades both the alumina No. 3, and No. 6.

No. 7. Oxide of manganese. This is not a necessary ingredient of the soil and by the use of muck you can add the small portion required by plants.

No. 8. Potash. Of this material your soil is sadly deficient and it should be added to your compact heaps in liberal quantities. The cheapest sources for you to obtain it from are, floor scrapings of the New-York potash warehouses, wood ashes, spent lye of the soap boilers, (which contains both potash and soda as carbonate) waste potash water from calico print works, &c.

No. 9. *and* 10. Both soda and chloride will be supplied by the use of the decomposing powders, as they are both contained in common salt, and it is probably due to this fact, that your soil is not so deficient of soda as of potash; the spray from the salt water adjacent to your grounds having kept up the supply of soda, the quantity as you will perceive, is much too small and should therefore receive the promised increase from the decomposed muck.

No. 11. Of this your soil has none, and hence the propriety of using plaster of Paris, sulphate of soda, and any other sulphates which can be had cheaply; the next paragraph will show how this substance may be had.

No. 12. This substance, phosphoric acid, is one of the most valuable the soil can contain and next to the salts of ammonia, should receive our attention. Your soil is deficient of it altogether. Combined with lime, phosphoric acid forms *phosphate of lime*, which through plants supplies the materials to animals for forming their bones, and it also enters largely into the composition of milk; without its addition your soil would not pay as a *dairy farm;* with it, the results might be different. Phosphate of lime exists largely in bones, and bone dust is much used as a manure, but they decay but slowly in the soil if applied in the raw state, and the cost of grinding is very considerable. A much better method is to dissolve rough bones in a mixture of three parts water, to one part sulphuric acid and throw the fluid evenly through the compost heaps; by treating bones with sulphuric acid, the *phosphate of lime*, which is insoluble in water, is changed into the *super-phosphate of lime*, which is soluble, and hence is immediately ready for the use of growing plants; the sulphuric acid used combines with part of the lime, and the resultant *sulphate of lime* although not soluble in water, is soluble when an excess of sulphuric acid is present, and thus becomes thoroughly divided through the compost; this plan is peculiarly adapted to your soil as the sulphuric acid is as necessary as the phosphoric, both being absent.

The refuse burnt bones of the sugar refiners, if treated with sulphuric acid, will supply the phosphate of lime.

I have just finished the analysis of a mineral phosphate of lime found in New-Jersey, and which promises a cheaper supply of this article to farmers—it is the chlor-apatite of the mineralogists, and dissolves in sulphuric acid.

No. 13.—*Carbonic Acid.*—Soils contain this gas in preportion to their other constituents, but after adopting the plans recommended above, your soil will supply itself with this material from the atmosphere.

You will now readily perceive how you can supply yourself with the deficiencies of your soil, and that too without so large a disbursement of capital as formerly used for the purchase of manure. You will readily see, by reference to an analysis of horse manure, such as you have been in the habit of purchasing, that it does not contain the constituents of plants in such proportions as to supply the present deficiencies of your soil, and if you will follow the plan now proposed, using only one-third your usual quantity of stable manure, and that composted with many times its bulk of prepared muck, with the ingredients above recommended added to the compost, you will find a marked improvement the first year, largely increased crops the second year, and a permanent capacity in the soil for giving a full effect to all manures afterwards added.

As your soil now is, the volatile portions of manures escape without being all used by the plants. The proposed plan will remedy this evil, and your manures will last as well as in a strictly clay soil.

Peruvian guano, if now applied, unless previously composted with charcoal dust, gypsum, or some other material capable of retaining ammonia, will last but one crop, and night soil, *the best of manures*, but two crops; but, add the prepared muck in sufficient quantities, and either of these manures will do good service. As you are desirous of raising heavy crops of esculents, much good manure may be cheaply made from the wastes of factories, easily and cheaply attainable; thus, the waste from glue factories, for your use, when composted with prepared muck, are cheaper than stable manures, costing nothing but their cartage from the city.

Peruvian guano at $50 per ton, if composted under cover with prepared muck, is cheaper than stable manure alone, at no cost but the cartage. You will readily understand this fact thus

200 lbs. of Peruvian guano composted, after being finely powdered, with one cord of decomposed muck, to which half a bushel of bones dissolved by sulphuric acid is added, will do more service to your land than ten loads of stable manure, of a half cord each; the bulk will be but one-fifth, and hence the expense of spreading will be much less. To dig one cord of muck from

your meadow, including cartage, will cost,............	$0 31
200 lbs. Peruvian guano,............................	5 00
Half bushel of dissolved bones,.......................	0 60
	$5 91

which is less than the cost of carting ten loads of stable manure from the city.

One hogshead of the ammoniacal liquors of the gas-works, with twenty-five cents worth of sulphuric acid thrown into it before being composted with ten loads of your muck, will make a manure very efficient for your soil; and after the missing inorganic constituents are once added, such a compost would be worth practically its bulk of stable manure.

Nitrogenous manures are always valuable to vegetable gardens, and if you will refer to an analysis of Peruvian guano, you will find that it contains many of the ingredients required by your soil for permanent improvement, besides supplying the ammonia and other nitrogenous matters so valuable for immediate use.

Guano should never be mixed with manures intended for fermentation; if simply mixed through decomposed muck or charcoal dust, it will, by its volatile character, disseminate itself through to the mass and be retained by it. So large a garden as yours requires an extensive manure-shed, to which the results of the stables, barn, &c., should be frequently removed, and unless at least ten times the bulk of muck has been added to the manures before being brought there, it should be there added. At the corner of this shed should be a cistern to receive the drainage of the heap, supplied with a pump to throw the drainage back on the heap, which pump should be used twice a week. If the heap give no drainage, then throw water into the cistern and pump up.

Compost heaps should never be dry, or they will *fire-fang*, which is collateral with burning, as it leaves only the ash with the part affected. To this cistern may be added any fluid water, dissolved bones, urine, spent lye of the soap-boilers, potash, soda, or any other requisite soluble material, and thus the labor of turning over this mountain of manure is done away with; the soluble portions of every part of the manure is carried to every other part, and thus a more even mixture is brought about than could be had by one hundred turnings over of the mass with forks. With such an arrangement the gardener may at any time supply himself with liquid manures for special purposes, for if the cistern contains no leakings, he can pump up water, and on its return it has full strength, and is ready to be applied to the land by the sprinkling cart. Indeed, many European gardeners use all they can of their manures in this liquid form, for if the soil is properly prepared to retain it, the manures so applied are equally lasting and much sooner at the roots of the plants for use. Crops raised by the application of liquid manures grow evenly, clearly proving that the fluid supplies their roots equally, whereas, when applied in more solid form, a single plant finding a mass succeeds, while a less fortunate neighbor is not so successful.

I have endeavored in the above to give all the necessary instructions, but should you find any points not clearly explained it will give me pleasure to supply the deficiency.

JAMES J. MAPES,
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STEAM AND ITS USES:

A Lecture, delivered before the American Institute, by James Frost, *Civil Engineer.*

[As reported for the Tribune.]

On Wednesday evening, James Frost, Esq., a distinguished practical engineer and scientific scholar, delivered before the members of the American Institute, a lecture upon steam, with special reference to a new discovery of the action of heat upon water, whereby vast results may be obtained by very trifling outlay.

The many strange misunderstandings and gross misrepresentations disseminated on these important matters, induced the lecturer to examine for the first time, and disclose how enormously Gay Lussac, Dr. Dalton, other chemists, and all writers on the steam engine had erred, in stating it required four hundred and eighty degrees of heat to double a volume of steam heated apart from water, by showing it required but four degrees of heat to double a volume of steam heated apart from water, and but sixteen degrees of heat to treble a volume of steam heated apart from water; and having at the same time described simple instruments and easy means for proving these useful facts, and more especially the immediate deduction, from steam being an invariable atomic compound of water and heat, an additional quantity of heat must, of necessity, constitute it a distinct chemical element, we have named STAME, and shown it to be both mechanically, economically, and chemically distinct from and of immensely greater value than steam.

This great chemical discovery of a new element, which can neither be over valued nor disproved, has become exceedingly distasteful to numerous engineers, bacause it so immeasurably exceeds their best performances; to many learned men, who, too indolent to examine, or too conceited to believe, because it exceeds their book knowledge and cherished theories, whence these gentlemen have learned a little, because but little can be learned of the inscrutable properties of matter and of heat, with their peculiar modesty, assume the knowledge of every property thereof, however incomprehensible to the best understanding, and ridiculously attempt to deny or to detract from any new facts that contradict their impotent theories, all of which yet broached on the subject of heat, are so insufficient and puerile as to be discreditable to the age.

An atrocious attempt of several members of one of the most learned universities of this country, to substitute, by arrogance and fraud, old pernicious vagaries for truth, will be given hereafter, for the purpose of showing as evil a spirit as tortured Galileo for disclosing a sublime truth, still exists in an American University, and, unhappily, this is not the only instance of several I can adduce.

Again, a more learned and liberal professor, who has long devoted particular attention to the subject of steam, has been attempting an apology for the astounding errors of Gay Lussac, and Dr. Dalton, by stating their experiments having been made on steam of less temperature than two hundred and twelve degrees, were established laws of nature: while all mine having been made on steam of greater temperature than two hundred and twelve degrees, though true, they were from that cause incomparable with those writers' experiments, and therefore, there was no difference between us.

Very unhappily for those established laws, and for this most learned and able apology—but more happily for science and the general welfare of mankind, they have led me to investigate the combination of greater heat with steam below the temperature of two hundred and twelve degrees, because it has disclosed the greater discovery that a volume of steam below two hundred and twelve degrees, heated apart from water, is proportionally far more expanded by extra heat, than is steam above two hundred and twelve degrees expanded by extra heat; and these newer facts will become unquestionable to any competent judge perusing the details of instruments and means pursued for eliciting the truth.

The speaker then detailed the mechanical means and the instruments by which he produced the results above stated. But this part of the lecture would be unintelligible without diagrams, and we must therefore pass it over.

The great economy that will result from the conversion of steam to stame, and its costliness for motive force, cannot but be apparent to any competent and candid judge, but great as is that economy, it possesses other great recommendations.

First let it be considered how desirable it would be that marine steamers should be propelled with double their present speed and less fuel. To accomplish this, it is well known four times their present power would be required. To produce this, sixteen boilers and water must be employed instead of the present four in each ship. Eight engines instead of the two in each ship, four paddle wheels driven at double the speed of the present slow wheels, while double the tonnage of coal will be also indispensable.

As marine steamers are already burdened with fuel and machinery to their utmost capacity, the foregoing enumeration shows their utter incapacity for this or any great improvement, however desirable for the advance of civilization, and only to be effected by the use of stame instead of steam.

By comparing the peculiar properties of these distinct elements it will be perceived that with the addition of a heater to the present four boilers in use, they would furnish from the present fuel, a far greater amount of elastic fluid (stame) of equal tension with the steam the sixteen boilers would supply with four times their present fuel, and as the voyage would occupy only half the time, half the present heavy tonnage of coals would better suffice than the double tonnage the sixteen boilers would require and consume.

Then again, the substitution of simpler, lighter, more scientific and powerful direct acting engines for the present enormous and needless, complex and cumbersome old fashioned engines, (the bed plates alone weighing much more than a better engine need to,) light propellers and shafting instead of the awkward and inconvenient paddle wheels, enormous shafting and needless wheel-houses, all of which old fashioned contrivances, would be rendered useless or destroyed by the first broadside from a man-of-war steamer; properly propelled by a power which, with all lighter and efficient machinery, boilers and heater, would (if reason and invention were preferred to copying,) be placed below the water line, and indestructible. A fuller description of these important matters will follow after we have shown the benefit of employing stame for locomotive purposes, whereby society may be immensely benefited at little expense either of money or intellect.

Having observed in a common locomotive boiler without steam blast, lead was melted by the smoke in its passage from the boiler tubes to the chimney, therefore were the steam conducted from the boiler through a tubular heater placed in smoke box, which heater in such well regulated heat would outlast the boiler, while the steam converted to stame without expense, would be so increased in volume and efficiency that two-thirds or more of the fuel and water now consumed in locomotives, would as well serve for their propulsion at present speed, or by suitable arrangements be propelled with fewer stoppages and vastly greater speed or power, by the combustion of only their present amount of fuel.

As desirable will be these improvements, as shameful and foolish will become their neglect, when the importance and great number of engines are recollected, for the saving of which they are susceptible, is immense, and the corresponding credit of effecting it more immense, and should redound to the honor of this country, as it would do if not hindered by inefficient theoretical blockheads, and might be returned to England as a small and grateful acknowledgment for the steam engine, spinning jenny and power loom.

Next, steam coaches, so desirable and often attempted on common roads in England by Gurney, Hancock, Church and others, though unsuccessfully, may now be certain of success, by using stame instead of steam, for if those coaches could run as they did with their limited power, others of a similar construction, deriving four fold power from the same amount of fuel and water could not fail to answer admirably, and the incessant attempts of agriculturists to substitute steam power for horse power would be as wonderfully encouraged and promoted, by finding that steam power may be quadrupled by the same expenditure of fuel and water in high pressure engines supplied with stame.

Again, if these coaches can travel on common roads, what can hinder such coaches running on plank roads, and successfully competing with locomotives on rails, for running as smoothly on planks, requiring neither turnouts nor switches, so often misplaced, and misleading to the destruction of engines and life; which awful contingencies these coaches are free from, and ought to be introduced, and might be, with profit and public advantage, if only limited in size and weight.

Then let it be further considered how much the general convenience and prosperity of the inhabitants of cold countries may be promoted by the use of stame, in a manner and degree hitherto unexpected and unattempted, and otherwise unattainable by the present comparatively improvident use of fuel, for if the quantity thereof, now daily used for domestic purposes were employed to propel a small steam engine, it would be found insufficient for any useful effect; but converting steam to stame, being in fact tantamount to converting one pound of fuel to four pounds, the quantity now used for domestic purposes, being thus quadrupled in efficiency, would be found sufficient for the production of a general highly beneficial power.

Then again comparing the peculiar properties of stame with steam, each escaping from a high pressure engine, steam will only boil and warm, while stame will bake, roast, boil and warm, so that stame is not only four times as cheap and powerful a motor as steam, but incomparably more useful, because after stame has propelled machinery with fourfold effect, it will still serve for every domestic purpose, and in many cases better, more convenietly and far more salubriously than fuel, now employed for domestic purposes alone, and thus double the profit that has hitherto been derived from domestic fuel may thus be easily or better realized.

Every farmer may thus obtain a constant costless power for performing the laborious part of his thrashing, grinding, and other wearisome occupations, and while adding to his own power the costless willing force of a giant, his family while exchanging stove heat and noxious gases for salubrious stame heat, may exchange pale faces and headaches for rosy cheeks and robust health.

The inhabitants of cities may equally obtain similar advantages, by similar means, and obtain an inconceivable amount of costless force (and will peculiarly increase its value at home, when employment is scarce and labor is superabundant,) for innumerable, ingenious and profitable purposes, and which could by no other means be attempted, which costless force, hitherto unseen and unknown to engineers cannot be estimated of less value in New-York alone, than the power that fifty croton rivers (devoted to that sole purpose) could furnish during half the year, and this costless force would continually increase with increasing population, and thus the onerous expense for fuel may be converted into active, comfortable, and lucrative employment for thousands who now languish in uselessness and wretchedness during the tedious wintry months.

Mr. Frost had a working model in the room, and gave actual experiments of the propositions which he advanced.

In September last a committee of the American Institute made a report (written by Prof. Renwick) upon the discoveries of Mr. Frost. The conclusions of that report are in the main favorable to Mr. F.

Having seen the thermometrical degrees at which steam, apart from water, is expanded by heat into larger volumes, it becomes important to learn the actual quantity of heat required for each expansion, and the apparatus represented by the lecturer's diagram, will show, first, how small is the quantity of heat required for doubling a volume of steam apart from water, when compared with the quantity of heat required for forming a second volume of steam of same tension; and, secondly, shows that heat in combining with steam is subject to and controlled by peculiar laws, perfectly distinct from those which obtain when heat combines with water for the formation of steam, which requires equal increments of heat for equal increments of volume, while on the contrary, when steam apart from water is expanded by heat, it is not only doubled in volume by a comparative trivial quantity of heat, but every additional increase of volume is obtained by a still smaller and rapidly decreasing increment of heat, so that the greater the decrease of volume the smaller will be the quantity of heat required for that latest volume, and although this is so contrary to the general laws of heat, and therefore so adverse te common apprehension, the diagram and table will not only show it to be a chemical fact, but will furnish the easy means for any competent person to verify the fact, which must be acknowledged to be of the first importance, for, were these facts understood, the present cost and weight of apparatus, and of fuel for the production of motive force, would both appear so extravagant, unscientific and wasteful, as was the use of steam for motive force, before the days of Watt; yet, at that period, as at present, engineers conceited they fully understood the subject, "*oft attempted, never reached.*"

Though it requires four times the force for double speed, it is evident, that were the present enormous rate of fuel consumed in steamers judiciously applied, it would furnish abundant power for propelling them at much more than double speed, while the consumption of fuel for the voyage would, of course, be reduced to much less than one half.

This increasing force obtained from decreasing quantities of heat applied to steam apart from water, not only proves the prodigious economy of this means of obtaining motive force, but points out the physical cause of the superlative explosive force, attendant on greatly and suddenly heated elastic fluids.

Many other and valuable advantages incidentally occurred during the experiments, which are omitted, because enough is given to stimulate the most torpid. We will, therefore, only add—

The following advantages have been frequently verified by several of the most eminent engineers and learned and competent men of New-York and other places, by a condensing engine and apparatus so constructed, when actuated alternately by common steam and by moderately heated steam, and so that the comparative quantities of heat and of water actually employed for motive force in each separate experiment could be accurately measured, as well as the power exerted by the engine.

The general results showed that more than six times the motive force was realized from equal quantities of heat and water, when employed to actuate the engine with heated steam or stame, than was obtained from the use of natural steam, each being alike produced from the same constant fire and time, and same engine, which engine, apparatus and scientific instruments are described in this work; and testimonials of competent and respectable engineers are open for inspection.

NEW ELEMENTS OF GEOMETRY, AND NEW METHOD OF DEMONSTRATING THE LAWS OF GEOMETRICAL OPERATION.

Synopsis of a lecture delivered by SEBA SMITH, *author of "New Elements of Geometry," before the members of the American Institute, Jan.* 21, 1851.

After adverting to the great importance and value of geometry, as one of the principal foundations of human knowledge, and the high estimation in which it has been held by sages and philosophers of all ages, the lecturer presented a brief comparison between the geometry of the ancients, particularly the Greeks, and the geometry of the moderns. The Greek method of investigating geometrical subjects, was by rule and compasses, and arithmetical calculations. They worked upon *real magnitudes*, things which they could see, and feel, and measure, and compute with rule and compasses. The moderns, on the contrary, during two centuries past, following the example of Descartes, have confined their geometrical investigations almost entirely to the algebraical process; working upon ideal quantities, mere abstractions, which they could neither see nor feel to be true representatives of *magnitude*. Hence the reason why the Greeks made great and rapid advances in geometry, while in modern times the science has made no advancement at all, but remains upon the same level where the Greeks left it. Hence the reason too why with the Greeks geometry was a popular study, and its beauties and benefits diffused among the many; while with the moderns it is considered dry, tedious, and forbidding; and its knowledge is limited to but very few. So common and necessary was a knowledge of this science considered among the Greeks, that Plato had inscribed over the entrance to his academy the words "Let no one who is ignorant of geometry enter here." But in our modern colleges, instead of *all* the pupils being required to understand geometry when they *go in*, not even one in a hundred of them have a respectable knowledge of it when they *come out*. Mr. Smith contends that when the true principles of geometry are understood, as laid down in his volume of "New Elements of Geometry," lately published, and the proper method of teaching the science shall be adopted, it will become one of the most common and most delightful studies of childhood and youth; its principles and its terms will become familiar as household words, and its admirable discipline and beautiful harmonies will be almost universally enjoyed by young and old.

Mr. Smith proceeded to explain the discoveries he had made in the laws of geometry, which greatly simplify the science, invest it with a new philosophy, and change it in fact, from an abstract to a mechanical science. In this view of the philosophy of geometry, he found himself sustained by Sir Isaac Newton and Dr. Barrow, and he quoted passages from those profound mathematicians directly to the point. Geometry, said Mr. S., has but one single object, and that is the measurement and comparison of magnitudes. Whether the magnitude be a material substance or a limited portion of space, the object and the operation are precisely the same, viz: the measurement of so much bulk or quantity of extension. Now for the accomplishment of this very simple and direct operation, the early geometers adopted and brought into use *three* different kinds of *units*, which they assumed to be unlike in their *nature*, and incapable of being made measures of each other. The unit of a line, they say, has length and nothing else; the unit of a surface has length and breadth but no thickness; and the unit of a solid has length, breadth, and thickness. And for more than two thousand years, the world has been sadly perplexed and bothered, and science greatly retarded, by mixing up these three heterogeneous quantities in all geometrical operations. And during the last two hundred years, these perplexities and difficulties have been doubled by throwing geometry into the hands of *algebra*, where the three heterogeneous units are subdivided into positive and negative quantities; thus compelling the operator to make use of *six* most uncongenial and unlike instruments of measurement, where the nature of the case required but *one*, and where there never should have been but one.

These two definitions, "a line is length without breadth," and "a surface is length and breadth without thickness," Mr: Smith wholly repudiates, because he finds them entirely contradicted by the perfect laws of geometrical operation. All solids have always been measured by cubes; and the laws of geometrical operation recognize but one kind of unit, and that is always a perfect *cube.* The laws of geometry make lines and surfaces to be as truly *solids*, that is, to consist of *cubic quantity*, as the solid itself. Lines and surfaces are no part or property of the solid, but separate and distinct quantities applied to the solid by the laws of geometry for the purposes of measurement; and those laws make every surface to have the thickness of the cubic unit used in the calculation, and every line to have the breadth and thickness of the cubic unit.

Mr. Smith then proceeded to demonstrate the truth of his theory by the *measurement of water* in different *geometrical forms.* For this purpose he had an apparatus constructed of tin vessels, upon the scale of a cubic inch for the unit. This apparatus consisted of spheres, tetrahedrons, cubes, octahedrons, cylinders and cones; and one inch being taken for the unit, the surfaces consisted of pans one inch in depth, exactly covering every face of each solid; and the lines consisted of tubes one inch square, that is, having the breadth and thickness of the cubic unit. The proper diameter of the quantity of extension of all solids, according to Mr. Smith, is an inscribed sphere; and computing any solid in *numbers*, if diameter is one, the contents or solidity equals one-sixth of the surface; if diameter is three, solidity equals half the surface; if diameter is six, solidity equals the surface, &c. Mathematicians have always said there is no geometrical agreement between the solid and its surface because the surface has no thickness; but in every instance Mr. Smith showed that, if the diameter was one inch, the solid six times filled just filled its surface pans; if the diameter was three inches, the solid twice filled just filled its surface pans; and if the diameter was six inches, the solid once filled just filled its surface pans. This law extended to the cylinder and the cone as perfectly as to the cube or the tetrahedron. He also poured solids into lines and surfaces into lines, showing in every instance exactly the same agreement between them in *cubic quantity* that is known to exist in arithmetical *numbers;* for instance, if an octahedron, whose diameter is *one*, be calculated in numbers, the contents or solidity is half the square root of three, viz: the decimal .866+, and the diagonal line in numbers is the square root of three, viz: 1.732+, which is just double the former number; that is, diameter being one the diagonal line in numbers is double the solid, and it proved exactly the same in *cubic quantity*, for taking an octahedron of one inch diameter, filling it twice and pouring it into the diagonal, just filled the diagonal. In the octahedron whose diameter is two, this proportion was exactly reversed. If computed in numbers, the diagonal line is the square root of twelve, viz: 3.464+, and the solid in numbers is 6.928+, just double the former number, and the contents of the octahedron, two inches in diameter, poured into its diagonal just filled it twice. To mention a single example of pouring surfaces into lines, if the tetrahedron, whose diameter is *one*, be calculated in numbers, the *surface* is found to be 10.392+; and in the octahedron, whose diameter is six, calculated in numbers, the *diagonal line* is found to be 10.392+. Mr. Smith took the surface pans of the tetrahedron, which was one inch in diameter, filled and poured them into the diagonal line of the octahedron, which was six inches in diameter, and the surface was found to be exactly equal to the diagonal line in *cubic quantity*, as it is in *numbers*.

In conclusion Mr. Smith called upon teachers and scientific men to give this important subject a fair and full examination, and if the principles and demonstrations are found to be correct, to give the world the benefit of the new truth.

ON FOOD.

[Communicated by a Member.]

The preservation of our general health depends upon a proper selection of food, as well as the most judicious modes of preparing it. All our organs are daily experiencing waste, and require a fresh supply of materials to replace it, so great is this waste, that probably it only takes a few years to change the substance of which we are formed entirely. It is to supply this decay that God has given us an instinctive desire for food; this foo on reaching the stomach immediately undergoes a chemical change, which is called digestion; this change is produced by the gastric juice, which is secreted about the internal region of the stomach, and is different in every respect from any other liquid; it consists by analysis of hydrocholoric acid, gastric mucus and water; and by its extraordinary solvent power, reduces aliment to a paste of a gray color, called by chemists chyme, this chyme in its passage through the digestive organs meets with sundry secretions known as bile, these change it into a fluid called chyle, this is taken up by the lacteals, and after undergoing several changes is conveyed to the blood, and through it carried to every part of our animal economy; thus continually renovating and renewing our nature. Therefore you will readily perceive that upon the nature of our food, and the mode of preparing it, depends the action of our digestive organs, and consequent strengthening of our corporeal frame, although the substances used by man as food seem to be almost infinite, whether animal or vegetable, still chemistry finds them composed of not more than fifty-four elementary ingredients; and each animal or vegetable substance contains from two to five or six of these ingredients united in one, and as they cannot be farther separated they are called elementary substances. Formerly the learned men declared that the elements forming all bodies were only four, viz: water, fire, earth and air. This doctrine is now known to be erroneous, from the fact that earth, water, and air have been found to be compounds. All animal and vegetable matter used in our animal economy as food are principally composed of four elements, and they are nitrogen, oxygen, hydrogen and carbon, consequently we are composed of precisely the same, like produces like, showing us how to judge of the value of the class of aliment we can employ most judiciously to sustain and renew nature? The first step towards civilized life was the raising of vegetables, herbs, roots, and fruits, which have been multiplied and improved to a most extraordinary degree, and the domestication of animals. The gardener and the agriculturist have contributed extensively to the comfort of man, and they in their turn have been taught much by chemistry, for instance the chemist has proved to us that wholesome aliment can be extracted from dry bones; that saw-dust by the addition of chalk and sulphuric acid may be converted into gum arabic, and this again by a simple chemical process may be changed into sugar. Sugar may be made from flax, or from linen rags, and old ropes, also from starch. Animal food is more powerfully nourishing to our system than vegetables. It contains the four elements, and nitrogen, included necessary to our being; when animal bodies decay, they are at once converted into vegetables, both consisting of the same elements; so that the hydrogen and oxygen which one day appears to us as a vegetable, may the next form one of the component parts of an animal. Matter once formed by the Creator exists forever, throughout creation; different applications of the very same matter are eternally taking place; vegetables are the food of animals, and conduce to their nourishment and growth, animals are the food of man, and when man in turn dies he decomposes and mixes with the soil, and in due course of time furnishes food to vegetables.

It has been suggested frequently that man in the early ages lived entirely upon vegetables, and that eating the flesh of animals was caused by degeneracy. The formation of man seems to throw some light on this subject. Carnivorous creatures may be distinguished from the herbivorous by the structure of their teeth and digestive organs. For instance, the teeth of animals living upon flesh and vegetables are short, as those of the carnivorous tribe; the herbivorous, feeding chiefly upon vegetables, are very long. Man must be considered an omnivorous animal, as he enjoys a wide range in the power he possesses of extracting nourishment from an immense variety of substances, thus enabling him to extend his power to the remotest regions of the earth, showing how wonderful the productions of nature are suited to his wants, in every climate feeling the genial influence of the sun. In warm regions, he selects for his principal food vegetables, as being the most appropriate, as the flesh of carnivorous animals would be too stimulating, form too much heat and blood, and, furthermore, vegetables are exceedingly abundant and delicious. In frozen regions, he selects animal food, because it keeps up the animal warmth of his body, strengthens him to endure the cold, and acts as a stimulus to his energies; besides all that, vegetables are scarce and difficult to be obtained. The Esquimaux have no vegetables at all, and live totally upon flesh and fish.

All animals, and all fish, may be safely used as food, with a very few exceptions, I cannot except any by name, for the reason that travellers say all the animals, fish, and nearly all the larger insects, are used as food by various nations of men.

Dr. Johnson remarks, "it is not very easy to fix the principles upon which mankind have agreed to eat some animals and reject others; and as this principle is not evident, it is not uniform. That which is selected as delicate in one country, is by its neighbors abhorred as loathsome. The Neapolitans lately refused to eat potatoes in a famine. An Englishman is not easily persuaded to dine on snails with an Italian, on frogs with a Frenchman, or on horse-flesh with a Tartar. The inhabitants of Skye hold not only eels, but pork and bacon, in abhorrence."

In America, eagles, rats, cats, mice, dogs and horses, are not eaten, still they are all used as food in other countries, and some of them are considered great luxuries. The flesh of the larger animals is generally selected as food. I do not approve of this plan, for the reason that the fibre is large, the grain is coarse and not so palatable as smaller animals. Mutton, for instance, is more delicate than beef, and so birds and fish than mutton. The flesh of young herbivorous animals, contains a larger per centage of gelatinous matter than the old of the same species; therefore it is that their flesh is more soluble, and feels the effect of hot water sooner, boils much more tender, and is more nourishing to persons of weak digestion. The flesh of old animals contains much less gelatine, but more albumen and fibrin, consequently it is a stronger food, and has more flavor, until the animals becomes old, when the flesh is apt to be stringy and indigestible. Veal is less digestible than beef, and lamb than mutton. The meat of the female is always finer grained and more tender than the male. The flesh of all animals, quadrupeds, fish and birds, may be much improved for the table, becoming more tender, fatter and larger, by means of a certain process known to all feeders. Full grown cattle intended for the butcher are in season in November, December and January.

Females are out of season when suckling their offspring, or a short time thereafter. The flesh of animals stall fed on oil cake and other similar matters, are not so wholesome or fine flavored as those fed in the open air and daily exercised to a certain extent. A stall fed animal deprived of exercise, will fatten in one-third less time than the exercised animal, and there is the same difference, in my opinion, in the value of the food. It is well known, that sheep fed upon mountains where they are compelled to roam a great distance for food, although lean, are superior to any other in flavor. Wild animals are never fat, but owing to the fresh air they breathe, and constant exercise, their flesh, though sinewy, tough and fibrous, is very high flavored and wholesome. Wild birds, too, are much more delicious than the domesticated.

Carnivorous and herbivorous animals are the two classes of quadrupeds used as food. The former live upon flesh; their fibres are excessively tough, and their flesh coarse and unpalatable. The herbivorous form the most delightful and wholesome food. I believe if a carnivorous animal were domesticated and fed upon vegetable instead of animal food, that his flesh would become equally nutritive as that of any herbivorous animal. White meats are thought to be the least stimulating, though they are the most gelatinous. It is considered very remarkable that travellers, with all the aid of zoological knowledge, have thus far failed to ascertain the originals of many of our domesticated animals. Another remarkable fact is, that all our animals while living are called by their English-Saxon name, and the moment we kill and dress them, their English names immediately become Frenchified. For example, the pig, deer, sheep, calf, and ox, while living: when dead are changed to pork, venison, mutton, veal, and beef. The terms applied to cattle of different ages are, when male, a bull; when castrated, a strik; a year old, a steer; five years old, an ox; a female five years old, a cow; first year, a calf; after the first year, a heifer; when near calving, a young cow; a castrated female, a spayed heifer.

Mutton as food, in the long-wooled sheep it is apt to be coarse grained, but easily fatted. In the smaller breed, with short wool, the flesh is fine grained and very high flavored, particularly if the animals are fed upon proper food. You cannot have a large and fine yield of wool and delicious mutton from the same animal, for the reason that the management favorable to the cultivation of long wool is not favorable to the production of fine mutton. The flesh of the ram is strong, tough, and has a disagreeable flavor. The ewe is fine when less than two years old; after that age, the meat becomes tough and coarse grained. The flesh of the wether is much sought after. In sheep, the mutton is not considered in perfection until the animal is at least five years old; younger than this, it is not so good. We generally kill them at three years old; two years is too soon for superior and highly flavored meat. Mutton, to be good, should be dark in color; this is effected by permitting it to hang up as long as possible without taint. Lamb, as food, is not so exciting as mutton; but if fatted on grass, and permitted to suck, it is more tender and milder. There is a breed of sheep in Asia Minor and in Southern Africa, remarkable for their immense, fat tails, which consist of a mass of marrow and fat, which is used for cooking, and in the place of butter; these tails sometimes weigh 45 pounds. In order to prevent the possibility of injury to this great luxury, the shepherds fasten thin boards under the tail to sustain it, and frequently attach small cars to the sheep to support it. The hog, as food: the hog is partly carnivorous and partly herbivorous; he is one of the most useful of all domestic quadrupeds, and forms the principal animal food among our laboring population. The fat of the hog differs from that of all other animals; in its consistence, quality, and distribution over the animal's body, the horse and the dog have no such, and the fat is equally mixed with the meat. Whereas, the fat of the hog covers the animal nearly all over, forming a thick layer between the skin and the flesh. Cooks divide hogs' flesh into ham, bacon, fresh and pickled pork, and roasting pig. They are almost uniformly employed in one of the ways mentioned as food for man. Swine are sold under different names in the market; until six weeks old, they are called pigs; six months old, porkers; two years old, bacon hogs, or simply hogs. The flesh of the hog was highly esteemed by the ancient Romans; held in abhorrence by the Turk and Jew, being considered by them the emblem of gluttony and filth, and has always been proscribed by the Eastern legislators. But among us no animal affords a more extensive series of savory food, and every portion of the animal is made use of in our domestic economy. The hog by nature is indolent, and filthy in his general habits; still, nothing delights him more than a comfortable sty well replenished with fresh straw.

There is no meat in domestic use that will take salt so readily as pork; that is probably the reason why it is so much sought after for naval stores. Deer, as food: deer, or venison, forms a delightful, highly nutritive, and very wholesome food. Buck venison is generally preferred, and is in season from November to February. The grain of the meat is very like that of mutton, but the taste entirely different. The moose, or elk, affords a most delicious, digestible, and exceedingly nourishing food. The Indians on our northern confines declare that they can travel twice as far on a meal of moose flesh as they can on any other animal food. The tongue and nose are both considered great delicacies by the inhabitants of Canada.

The goat in former days was held in high estimation as food The meat of the wether goat is considered the best; it is very like, and but little inferior to, venison. The flesh of the kid is very fine; I ate it once on the Mount St. Gothard, in Switzerland, and really imagined I had never before tasted any meat equal to it. I was very much fatigued and hungry from the effects of a long ramble among the mountains, which may account for it in some measure; but still I am inclined to think it a very fine dish. The milk is considered to be more wholesome, as a diet, than that of any other animal.

Rabbits: the flesh of this animal is apt to be dry and void of fat, if taken for the table in a wild state. The large, domesticated white rabbit has a white, delicate, and high flavored flesh, which, when [illegible] in the most approved style, is quite equal to turkey.

The feath[illegible] come next in order as food for man, and they furnis[illegible]onsiderable and varied supply, which may be divided [illegible]asses—the domesticated, such as the goose, barn-yard fowl, duck, and turkey; and the wild, generally termed game, as the woodcock, grouse, partridge, &c. There are numerous other birds which are eaten, but not termed game; such, for instance, as the lark, pigeon, and robin. Some of the domestic fowl have white flesh, such as the turkey, partridge, and common fowl; others have a dark colored flesh, as the duck, goose, grouse, and others.

The food given to different birds influence in a great degree their flavor. Those fed upon cereal grains and vegetables, as the barn-yard fowl and turkey, have a delicate and white flesh; others, that are fed on animal as well as vegetable food, such as geese, ducks, &c., have a dark, rich, high flavored flesh; and those which are aquatic, and live chiefly upon fish, partake of their flavor, and have a rank, disagreeable, fishy taste. The fat of birds is entirely unlike that of quadrupeds; it is not marbled, or dispersed through the muscular system. Different parts of a fowl are very different in flavor and appearance; the muscles that move the legs when cooked are dark, while those which move the wings are white. Each part has its advocates among connoiseurs: the legs of woodcock are infinitely to be preferred to the breast. Generally speaking, the flesh of all birds is very nutritious and easily digested, even by valetudinarians. The eggs of fowl are exceedingly nutritious; those produced by the barn-yard hen are probably, when newly laid, the most delicate and esteemed, especially if the bird has been fed upon proper food.

Fish as food.—Of this variety of good, we have in the ocean, rivers and lakes, an inexhaustiole supply. It is less nutritive, and far less stimulating than butcher's meat; being very tender and soluble, it occasions less excitement of a febrile nature, and is more easy of digestion; consequently it is well calculated as an aliment for invalids and persons of sedentary habits. It is to be preferred in its fresh state, but enormous quantities are dried, pickled and salted. In Liberia and large portions of Iceland and Norway, dried fish is the principal part of the nourishment of the inhabitant; in Greenland and the polar regions, they have scarcely any other. Fish may be divided into three divisions, relatively to waters in which they live. 1st. Those which exist altogether in the ocean are named salt-water fish, among them are the herring and cod. 2d. Those which inhabit fresh water, as the carp, trout, pickerel, &c. 3d. Those which migrate from salt to the fresh water, living a portion of their time in each, alternately, as the shad, sturgeon, salmon and others. There is a wonderful variety in the structure, muscles and firmness of fish. The muscles of eels are fibrous; of cod, they are disposed in flakes; of the whale and sturgeon, they are nearly allied to the flesh of animals. The muscular portions of fish, generally speaking, are not so firm as those of animals; in some it is oily and fat, in some dry, in others gelatinous. As a general rule fish are in the best condition for the table before the spawning season, and while they are filled with roe, particularly smelt and mackerel. Immediately after spawning I do not consider any fish in season, or in fact wholesome as food. You may always discover whether a fish is in season or not, by observing the muscles when boiled; if they are very firm, and present a curdy, white appearance, the fish is in season; if on the contrary the muscles appear bluish and transparent, the fish is not in season. Fish are said to surpass all animals in fecundity; a million and a half of ova have been found in a sturgeon; one hundred and thirty thousand in a mackerel; one hundred and seventy thousand in a carp; one hundred and sixty-seven thousand in a pike, and three millions in a cod fish.

Shell fish.—Under this head may be named two divisions of crustaceous animals, as crabs, shrimps and lobsters; these have feet covered with shells, and molluscous, as oysters, cockles, &c.; these are in very great variety.

The lobster, though nutritive, is not generally imagined to be digestible, and that is the reason they require condiments in their preparation, such as pepper, vinegar, oil, etc. When stale they are no doubt exceedingly unwholesome; they are in season from April to September.

The crab is equally nutritive with the lobster, and about as wholesome; they are in season during all the months in the year except May, June and July.

Oysters are generally considered extremely nutritious, and a lighter food, particularly when eaten raw; by cooking they loose their saline taste, and mucilaginous matter. They are not fit for the table during a spawning season.

There are many species of the turtle made use of as food, taken from the ocean, and likewise tortoises or land turtles. They are generally considered a delicious article of nutriment.

The crocodile is eaten in Africa; the lizard in South America; the frog in France; the toad is likewise eaten in Africa. Locusts are considered a great luxury, both salted and fresh, in Abyssinia and Barbary. "Diodorus Siculus describes the natives of Ethiopia as feeding upon locusts." "John the Baptist lived upon locusts and wild honey."

Vegetables used as food are consumed by man in larger proportions, probably, than any other description of matter. Diodorus Siculus and Pliny inform us that the primeval races searched the fields and forests for wild plants to eat. The Grecians are represented at an early day as living chiefly upon acorns and wild pease. In some warm climates, even at the present day, vegetable nourishment forms the principal nutriment. Some plants may be eaten with impunity while young and tender, which when more advanced in their growth become poisonous. The seeds of some plants are used as food; the leaves of others; and others still the roots. Some require that their poisonous juices be extracted, after which they are delicious as a vegetable. The fibrous parts of vegetables are not generally considered digestible; the skins of grapes will pass through a man unchanged, likewise the husks of pease, corn, oats, and other cereal grains, will pass through the stomach of horses, birds, &c., still possessing the germinating power, owing to the indigestible husks enveloping them. Vegetables so closely resemble animals, that the only difference I can discover between the two is, that the vegetable is devoid of sensation and the animal possesses it. The animal receives its food through its mouth, the vegetable through its roots; their powers both depend upon the vital principle; they both digest, assimilate, transform and convert into nourishment the substances that enter their systems. The mode by which these numerous changes are performed, must be left to the chemistry of nature to discover.

Vegetables as well as animals are provided by the Creator with an apparatus for breathing the air that is essential equally to the lives of each; they each secrete different matters, and require several kinds of food; together with a number of temperatures to enable them to grow and flourish. Animal and vegetable, have approached so near to each other as to have rendered it next to impossible to discern to which of the two kingdoms they really belonged. They both consist of the same elements as before named, hydrogen, carbon, oxygen and nitrogen; and how they compose their principles of life out of these few elements is perfectly incomprehensible to me; as much so as the phenomena by which they propogate their species. The vegetable kingdom may truly be called the source from which springs the prosperity or misery of man. The instant man ceases to bestow his labor upon the earth, it becomes barren, and all the greatness of its inhabitants vanishes with agriculture. When the people who formerly inhabited Asia, India, Egypt and the rich country bordering on Mount Atlas, were an agricultural people, they possessed magnificent harvests, innumerable flocks, splendid forests and rich fields. By the ambition of princes, war instead of agriculture became the order of the age, consequently these once powerful nations, became degraded and the traveler now finds sterile fields, sparse harvests, and a starving populace. Thus the moment the rage of conquest supplants the labor of the agriculturist, whole countries are almost depopulated, barbarism returns, cities are overturned, and the natural riches of the earth vanish. By the skill of the gardener and agriculturist, we now enjoy as food, a great number of plants under the following numerous heads, to wit: edible marine plants; edible fungi; leguminous vegetables; esculent roots; spinaceous plants; the cabbage tribe; alliaceous plants; asparagenous plants; acetaceous plants; pot-herbs; sweet-herbs; plants used for tarts; plants used for pickles; under these general heads a vast tribe of useful vegetables might be named if necessary.

The most delightful of all food provided by the Ruler of the universe, is still to be named, and that is fruit; the hardy varieties of which are fortunately within the reach of all. We are indebted to the Grecians and Romans and other enlightened ancient nations, for their early introduction through conquest, into England and Spain; and in due course of time, into our own country, after their acclimation there. In this manner the fruits of once highly cultivated Asia, such as the peach, cherry, plum, apple, pear, orange, fig olive, and very many others, natives of that country have reached us; and through us will soon find their way to the islands of the Pacific ocean, California and Oregon. Nuts are an article that were much employed as food by ancient nations; and are still used in some countries extensively, as a source of aliment; the kernel of nuts contains a very large per centage of oil; consequently they are very nutritious, but the most indigestible of all the vegetable tribe. Berries (Bacca,) is a name by which numerous small fruits without membraneous covering, consisting of a pericarpium full of pulp and juice, with the seeds disposed throughout it are known. Those used as food usually grow upon shrubs in cultivated grounds; such as the cranberry, gooseberry, raspberry, currant, barberry, &c. The spices used in food do not come to maturity in the open air in our latitude, they are the productions of the Spice Islands in the Indian ocean.

Dr. Paris observes that the use of spices was not intended by nature for the inhabitants of temperate climes; they are heating and highly stimulant; more weight should not be given to this objection than it deserves. Man is no longer the child of nature, nor the passive inhabitant of any particular region; he ranges over every part of the universe, and elicits nourishment from the productions of every climate. It may be, therefore, necessary that he should accompany the ingestion of foreign aliment with foreign condiment. Nature is very kind in favoring the growth of those productions which are most likely to answer our local wants. Those climates, for example, which engender endemic diseases are, in general, congenial to the growth of the plants that operate as antidotes to them.

Spices stimulate the appetites of some, and destroy the tone of the stomach of others. Bread, the staff of life, though named last, is by no means the least of man's comforts, since he first became civilized, even until now, no aliment has been more universally employed as nourishment. To the cultivation of cereal grains for bread. we owe our present advanced condition of society; before its introduction, whole districts of country were only used for pasturage and hunting grounds; and there was no such thing known as territorial division of landed property. The invention of bread was ascribed by the Greeks to Pan, but like most arts of early times, its invention is involved in obscurity. The Egyptians were acquainted with bread at a much more remote period.

It is mentioned in the Bible, in the days of father Abraham: "And Abraham hastened into the tent to Sarah, and said, make ready quickly three measures of fine meal, knead it, and make cakes upon the hearth." Bread, like all farinaceous matter is exceedingly nourishing, particularly on account of the gluten it contains, if not eaten too frequently when fresh, in that state it is apt to produce acidity, derange the stomach, and lay the foundation for dyspeptic diseases. There are various other articles used for bread besides cereals, too numerous to mention. "By boiling grinding and drying, Dr. Davison says, the tops and bark of gooseberry bushes, holly and hawthorn, the inner bark of the elm, roots of fern, and sundry other plants, may be converted into wholesome food." Subject, milk as food, should form a portion of this, but as it was discussed fully at the last meeting of the club, I will not allude to it.

IMPORTED CATTLE.

A. CHANDLER, ESQ.,

Sir—Having, at the show of the American Institute, in October, 1850, exhibited the imported short horn bull, Earl of Seaham, and with him won the first prize in the oldest class of short-horn bulls, I deem it proper to give some account of him and his family, and of the short-horn cattle which, in the last two years I have imported for Colonel Sherwood and myself.

The propriety of placing on record the history of animals, which the Institute has deemed worthy of its premiums and honors, is obvious. By its awards, a character is conferred, and a value given to the cattle which receive them. The position thus conferred induces the acquisition of particular strains of blood for breeding purposes. How important, then, that all which relates to a proper knowledge of the animals, stamped by the Institute's approval, should be within reach of breeders and farmers, to inform and guide them.

In 1849 and 1850, I selected, in England, and imported to this country, thirteen short-horns from the celebrated herds of Mr. Stephenson, of Durham, and Mr. Bates, of Yorkshire, for Colonel J. M. Sherwood, of Auburn, and myself.

In October, 1850, I exhibited at the show of the American Institute, the bull, Earl of Seaham, and the first prize for short-horn bulls, two years old, was awarded to him. He was shown at Albany in September, 1850, and won the 1st prize for two year old short-horn bulls, of the New-York State Agricultural Society.

I give the full particulars of this importation of short-horns; their ages, colors, pedigrees, and breeders.

The animals of this importation may all be found registered in the English Short Horned Herd Book, a work now consisting of nine volumes, devoted exclusively to the registry of short-horn cattle. The numbers appended to the bulls, in the following pedigrees are their numbers in the Herd Book.

Earl of Seaham, (10,181.)

Roan, calved April 21, 1848, bred by John Stephenson, Esq., Wolviston, Durham, England, the property of J. M. Sherwood and A. Stevens, New-York; got by the Earl of Antrim (10,174,) dam, Primrose by Napier (6,238,) grandam, Rose Ann by Bellerophon (3,119,) great grandam, Rosette by Belvedere (1,706,) gr. gr. g. dam, Red Rose by Waterloo (2,816,) gr. gr. gr. g. d. Moss Rose by Baron (58,) gr. gr. gr. gr. g. d., Angelina (bred by Sir Henry Vane Tempest, Bart. of Wynyard,) by Phenomonon (491,) gr. gr. gr. gr. gr. g. d., Anna Boleyne by Favorite (252,) gr. gr. gr. gr. gr. gr. g. d., Princess (bred by Robert Colling, of

Barmpton,) by Favorite (252,) gr. gr. gr. gr. gr. gr. g. d., Brighteyes by Hubback (319,) gr. gr. gr. gr. gr. gr. gr. g. d., Brighteyes (bred by Alexander Hall, of Haughton) by Snowdon's bull (612,) gr. gr. gr. gr. gr. gr. gr. gr. g. d., Beauty by Masterman's bull (422,) gr. gr. gr. gr. gr. gr. gr. gr. gr. g. d., Duchess of Atholl, (bred by John Hall, of Haughton,) by Harrison's bull (292,) gr. gr. gr. gr. gr. gr. gr. gr. gr. gr. g. d., Tripes (bred by Mr. Pickering, of Foxton,) by the Studley bull (626,) gr. gr. gr. gr. gr. gr. gr. gr. gr. gr. gr. g. d., bred by Mr. Stephenson, of Ketton, in 1739. The female ancestors of Tripes were bred by and in the possession of Mr. Stephenson, and his father of Acklam, Yorkshire, nearly sixty years. Mr. Stephenson, of Acklam, brought his first cow of this tribe from the Aislabie family, of Aislabie, in 1684.

RED ROSE.

Red, calved in 1846, bred by John Stephenson, Esq., the property of J. M. Sherwood, Auburn, New-York; got by Napier (6,238,) dam Tuberose by South Durham (5,281,) grandam, Rose Ann by Bellerophon (3,119,) &c., as in the pedigree of Earl of Seaham.

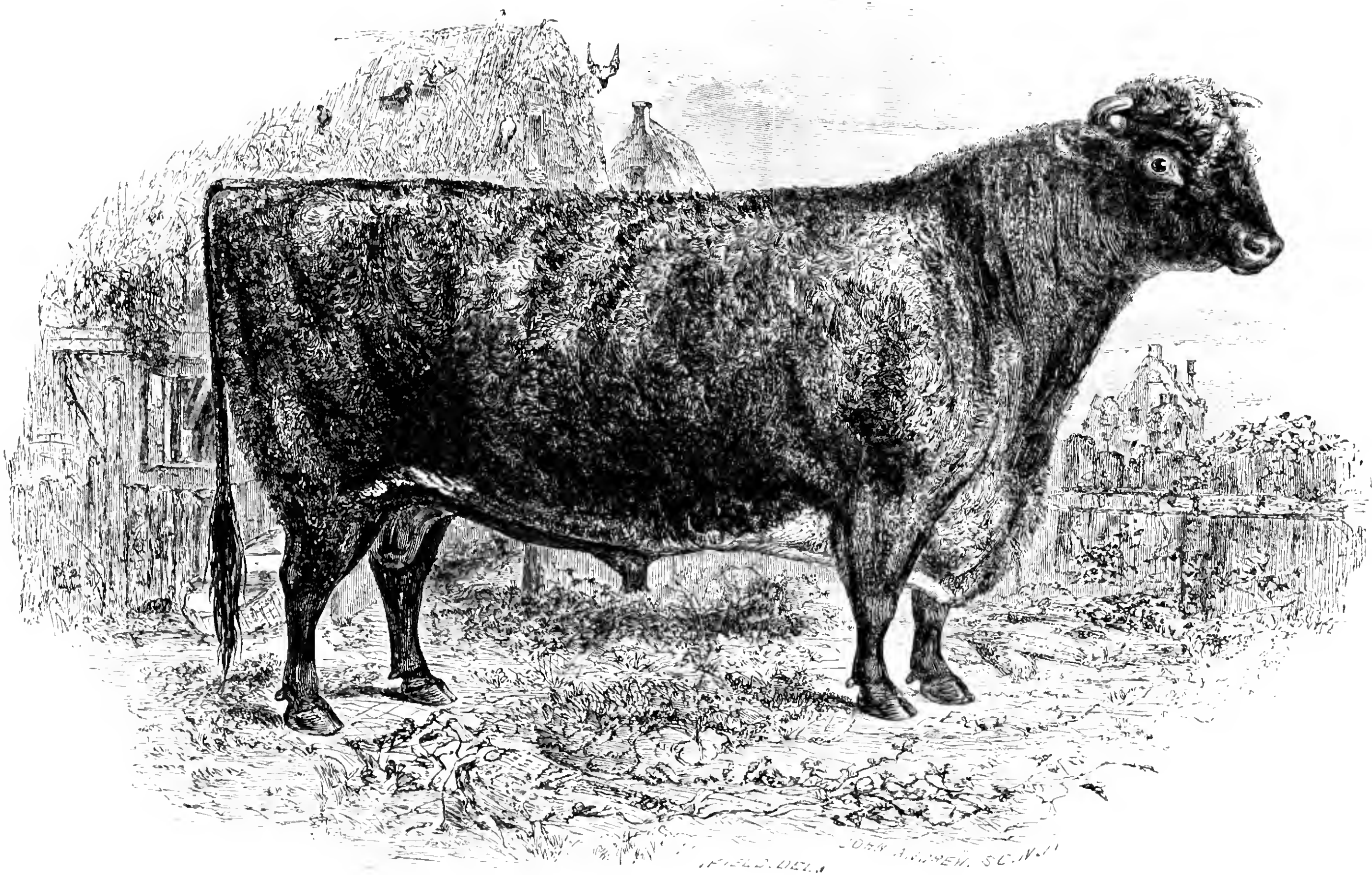
RED ROSE III.

Roan, calved in 1848, bred by John Stephenson, Esq., the property of J. M. Sherwood; got by General Sale (8,099,) dam, Maid of Orleans by Mameluke (2,258,) grandam, Helena by Waterloo (2,816,) great grandam, Moss Rose by Baron (58,) &c., as in the pedigree of Earl of Seaham.

Red Rose III. won the second prize for yearling short-horn heifers at the New-York State Agricultural Society's show, at Syracuse, in 1849, beaten by Princess II.

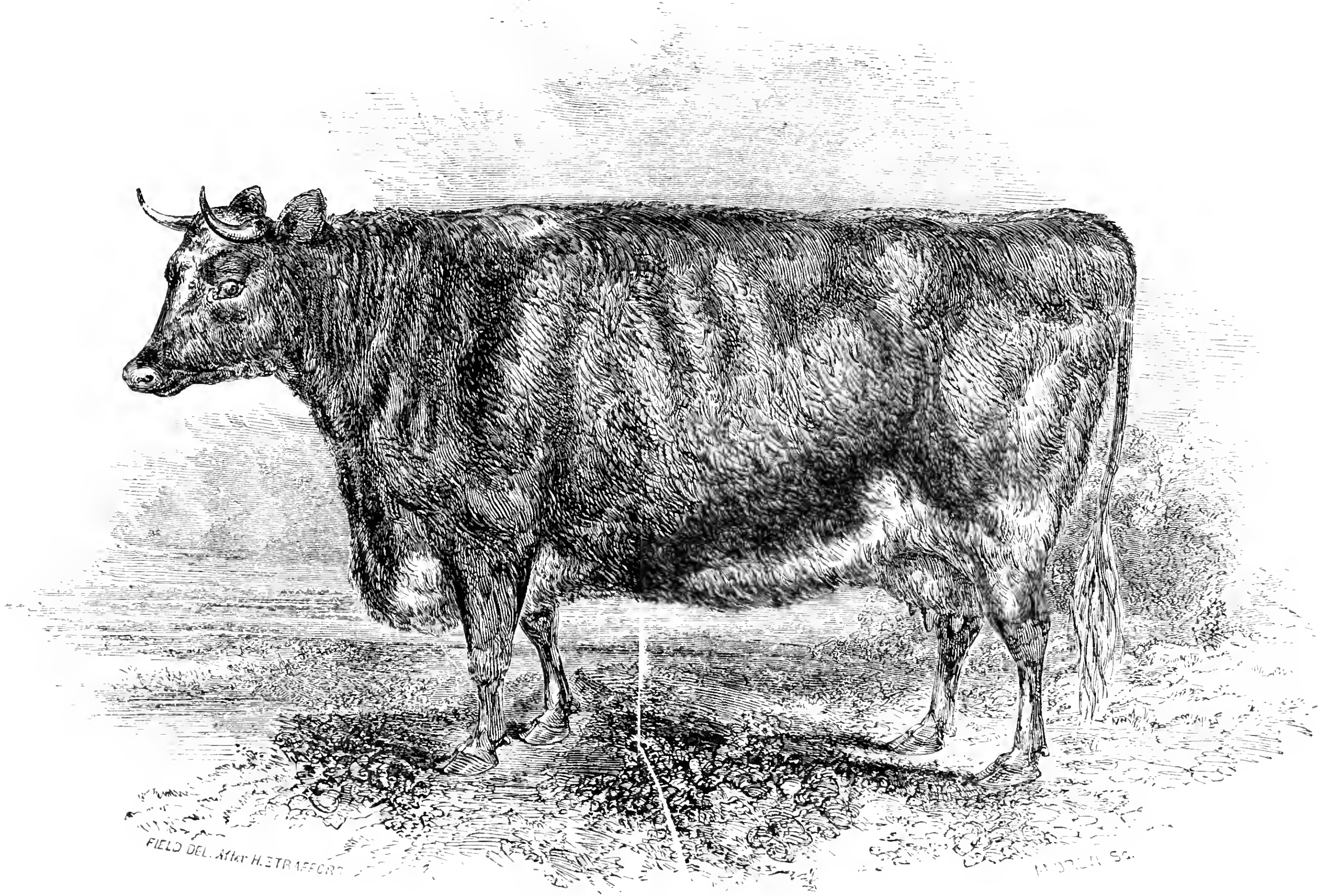
TUBEROSE II.

Roan, calved in 1848, bred by John Stephenson, Esq., the property of J. M. Sherwood; got by Earl of Antrim (10,174,) dam, Tuberose by South Durham (5,281,) grandam, Rose Ann by Bellerophon (3,119,) &c , as in the pedigree of Earl of Seaham.

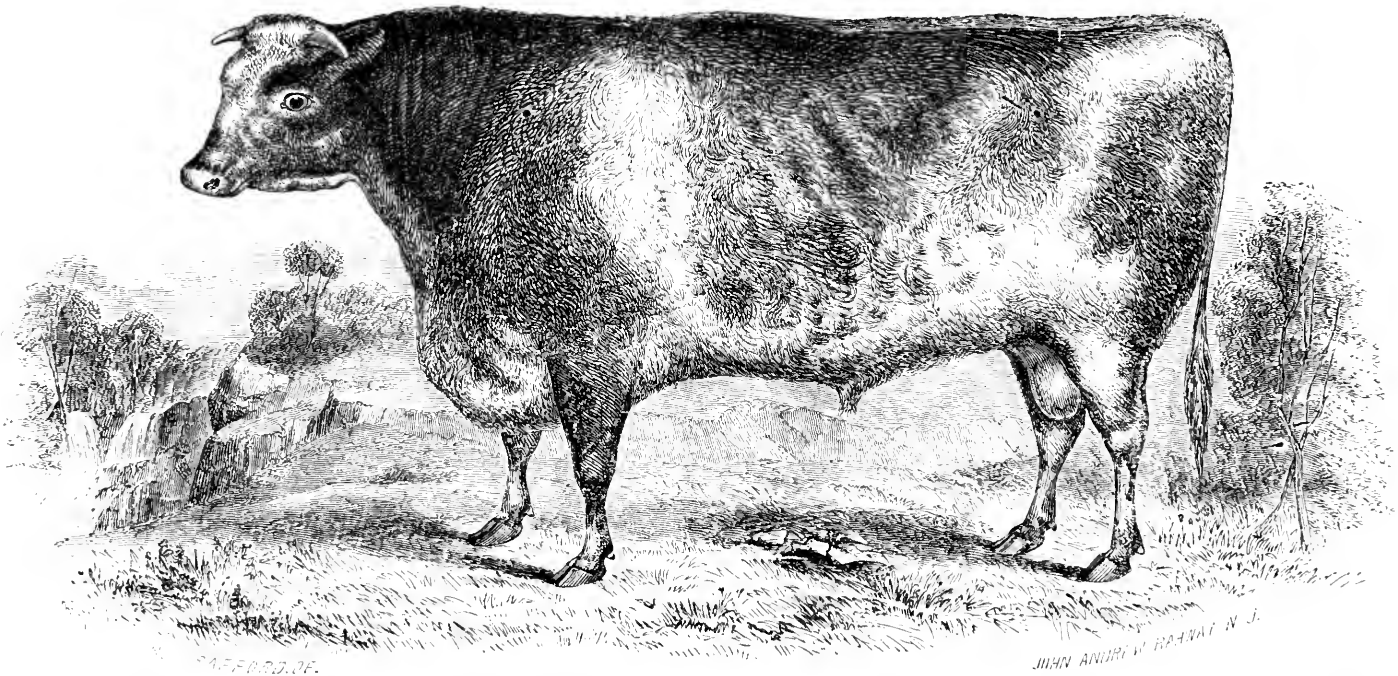


WATERLOO (red); bred by Mr. Stephenson, of Wolviston, Durham, England.

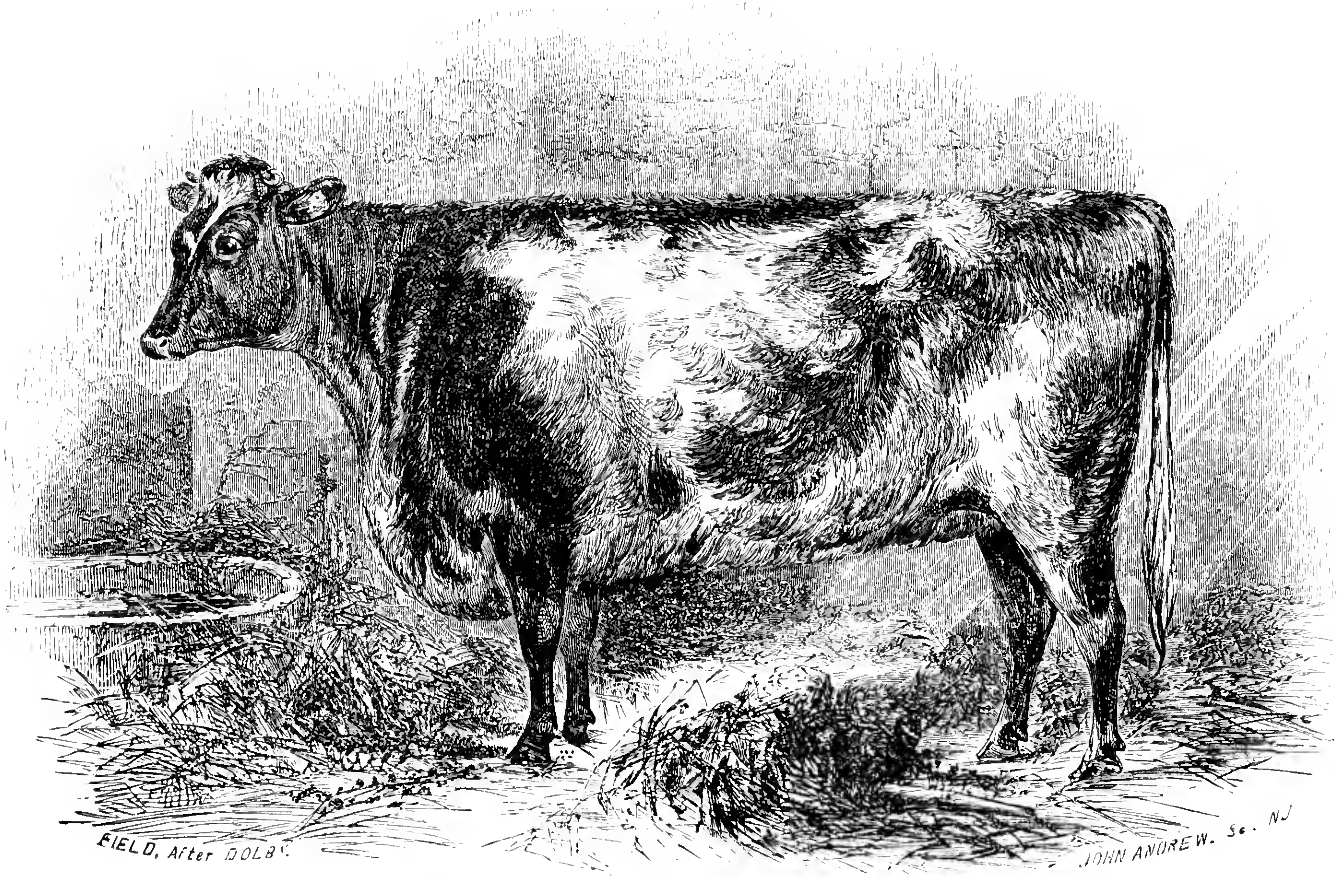
HEAD OF MR. STEPHENSON'S CELEBRATED BULL WATERLOO.



DUCHESS 34. Bred by Mr. Bates; by Mr. Stephenson's Belvedere, (1706.)



THIRD DUKE OF CAMBRIDGE, (5941,) at two years old. Winner of the 1st Prize for Short Horn Bulls, at Syracuse, in 1849, of the New-York State Agricultural Society; and the same prize at Albany, in 1850. Property of A. STEVENS and J. M. SHERWOOD.



PRINCESS II.; imported; bred by Mr. STEPHENSON; winner of 1st prize for Short Horn Yearling Heifers, at Syracuse, in 1849; and 1st prize for Two Year Old Short Horn Heifers, at Albany, 1850, at the Shows in those years of the N. Y. State Ag. Society. Property of AMBROSE STEVENS.

HEAD OF A SHORT HORN COW.

Princess I.

Red, calved in 1846, bred by Mr. Stephenson, the property of A. Stevens, of New-York; got by Napier (6,238,) dam, Rose Ann by Bellerophon (3,119,) &c., as in the pedigree of Earl of Seaham.

Princess II.

Roan, calved in 1848, bred by Mr. Stephenson, the property of Ambrose Stevens, of New-York; got by General Sale, dam, Duchess by Mr. Bates' Fourth Duke of Northumberland (3,649,) grandam, Rosette by Belvedere (1,706,) &c., as in the pedigree of Earl of Seaham.

Princess II. won the first prize for yearling short horn heifers at the show of the New-York State Agricultural Society, at Syracuse, in 1849; and the first prize for two year old short horn heifers at their Show, at Albany, in 1850.

Princess III.

Roan, calved in 1848, bred by Mr. Stephenson, the property of Ambrose Stevens; got by Napier (6,238,) dam, Rose Ann by Bellerophon (3,119,) &c., as in the pedigree of Earl of Seaham.

Princess IV.

Roan, calved in 1848, bred by Mr. Stephenson, the property of Ambrose Stevens; got by Napier (6,238,) dam, Princess I. by Napier (6,238,) grandam, Rose Ann by Bellerophon (3,119,) &c., as in the pedigree of Earl of Seaham.

Princess V.

Roan, calved in 1849, bred by Mr. Stephenson, the property of Ambrose Stevens; got by Earl of Chatham (10,176,) dam, Tuberose by South Durham (5,281,) grandam, Rose Ann by Bellerophon (3,119,) &c., as in the pedigree of Earl of Seaham.

Lord Vane Tempest.

Red and white, calved in 1849, bred by Mr. Stephenson, the property of J. M. Sherwood; got by Earl of Chatham (10,176,) dam, Princess I. by Napier (6,238,) grandam, Rose Ann by Bellerophon (3,119,) &c., as in the pedigree of Earl of Seaham.

Lord Vane Tempest, won the 1st prize for short-horn bull calves, at the show of the New-York State Agricultural Society, at Albany, in 1850.

Wolviston.

Red, calved in 1850, bred by Mr. Stephenson, the property of Ambrose Stevens, got by Earl of Chatham, (10,176) dam Princess by Napier (6,238) grandam, Maid of Athens by St. Albans (5,047) great grandam Helena by Waterloo, (2,816), great great grandam Moss Rose by Baron (58) &c., as in the pedigree of Earl of Seaham.

Third Duke of Cambridge (5,941).

Roan, calved Sep. 1841, bred by Thomas Bates, Esq., of Kirkleavington, Yorkshire, England, the property of Ambrose Stevens and J. M. Sherwood, got by Duke of Northumberland, (1,940), dam Waterloo II, by Mr. Stephenson's Belvedere (1,706), grandam Waterloo, I, (bred by Mr. Parkin, of Thorpe) by Mr. Stephenson's Waterloo (2,816) great grandam Lady Antrim by Waterloo, (2,816); Anna by Lawnsleeves, (365); Angelina, by Phenomenon (491) &c.

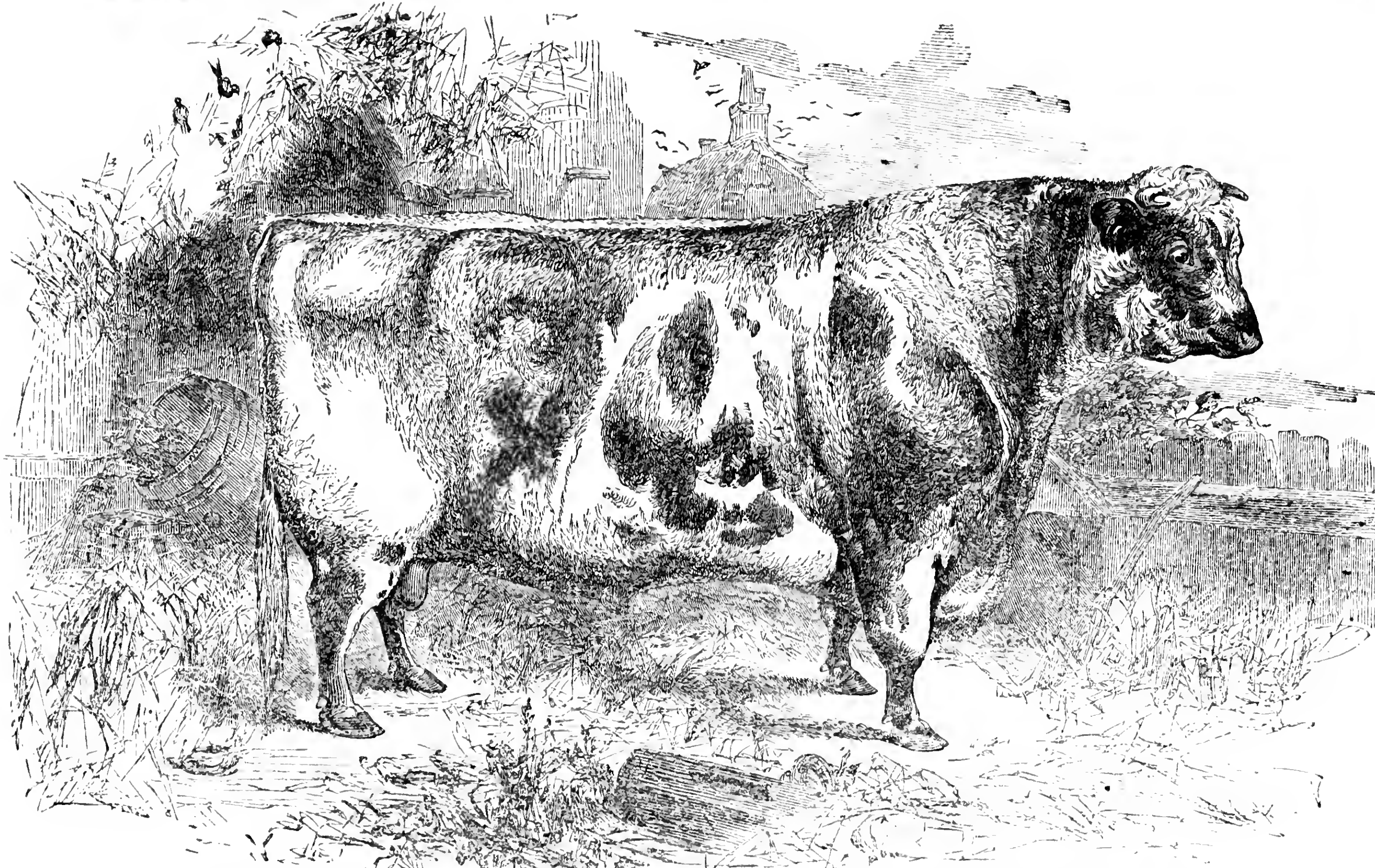
Waterloo V.

Roan, calved in 1841, bred by Mr. Bates, of Kirkleavington, the property of A. Stevens, got by Duke of Northumberland, (1,940), dam Waterloo III, by Norfolk, (2,377) grandam Waterloo I, by Mr. Stephenson's Waterloo, (2,816), &c., as in the pedigree of 3d Duke of Cambridge.

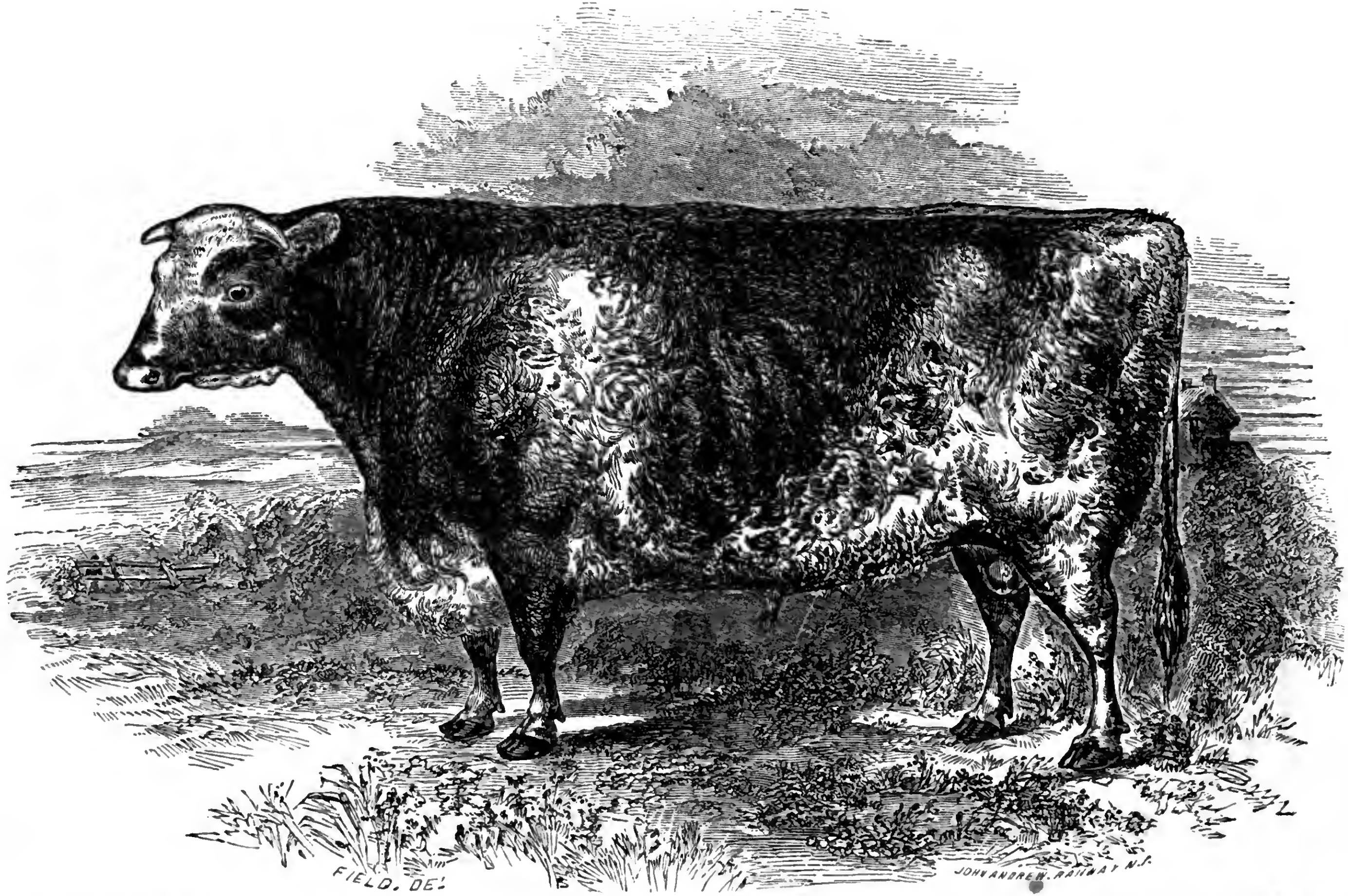
Duke of Northumberland (1,940) bred by Mr. Bates, was got by Mr. Stephenson's Belvedere, (1,706), dam Duchess, 34th, by Mr. Stephenson's Belvedere, (1,706) &c.

Fourth Duke of Northumberland, (3,649), bred by Mr. Bates, was got by Short-tail, (*a son of Belvedere* 1,706) dam Duchess 34th, by Mr. Stephenson's Belvedere (1,706).

Short tail (2,621) bred by Mr. Bates was got by Mr. Stephenson's Belvedere (1,706), dam Duchess, 32d. by Second Hubback, &c.



DUKE OF NORTHUMBERLAND, (1940); bred by Thomas Bates, Esq.; got by Mr. Stephenson's Belvedere, (1706); Dam, Duchess 34th, by Mr. Stephenson's Belvedere, (1706), &c. Winner of 1st prize of the English Royal Ag. Society, at Oxford, 1839; and 1st prize at York, 1842, as best Short Horn Bull. He got 3d Duke of Cambridge, (property of J. M. Sherwood and Ambrose Stevens); and Oxford 5th, (property of L. G. Morris).



3d DUKE OF CAMBRIDGE, at 7 years of age. Bred by THOMAS BATES, Kirkleavington, Eng. The property of A. STEVENS and J. M. SHERWOOD. Winner of the 1st Prize for Bulls in Aged Class of Short Horns, at Syracuse, 1849; and 1st Prize in same Class, at Albany, in 1850, at the Shows of the New-York State Agricultural Society in those years.

Of the bulls in the above pedigrees, Mr. Stephenson, bred *Earl of Chatham*, (10,176) by Napier (6,238), dam by Mr. Bates's Fourth Duke of Northumberland (3,649) ; *Earl of Antrim*, (10,174) by Napier, (6,238) dam, Maid of Orleans by Mameluke, (2,258) ; *General Sale* (8,099), by Napier, (6,238), dam Rose Ann, by Bellerophon, (3,119); *Napier* (6,238) by South Durham, (5,281) dam Rosette, by Belvedere, (1,706) ; *South Durham*, (5,281) by Belvedere (1,706), dam Helena by Waterloo, (2,816) ; *Bellerophon*, (3,119,) by Belvedere (1,706,) dam Helena, by Waterloo, (2,816) ; *Belvedere*, (1,706) by Waterloo, dam Angelina II, by young Wynyard, (2,859), grandam Angelina by Phenomenon, (491) ; *Waterloo*, (2,816,) by young Wynyard, (2,859,) dam, Angelina by Phenomenon, (491.) Mr. Stephenson also bred *Angelina II*, the dam of Belvedere.

* *Young Wynyard* (2,859,) by Robert Colling's Wellington, (680,) dam Princess, by Favorite, (252,) was bred by the Countess of Antrim, widow of Sir Henry Vane Tempest, Bart.

The cuts, except one, which illustrate this article, are portraits of animals mentioned here as imported, or are sires and dams of those tracing in the pedigrees. The head of Mr. Stephenson's Waterloo, presents the finest short horn head imaginable. The cut of the head of the white cow, is an illustration of what a fine head may be, and actually has been.

More than two centuries since the Aislabie family of Aislabie and Studley, possessed an extraordinary tribe of cattle. From hem, the Pennimans of Ormsby, the St. Quintins of Scampston, and the Milbanks of Barningham, procured cattle. Mr. Sharter of Chilton, near Ketton, procured cattle from Barningham, and from them bred the Studley bull. (626.)

In 1684, Mr. Stephenson of Acklam, bought a cow of the Aislabie family, and afterwards sent cows to Studley to be served, and used bulls from Studley in the possession of the Pennimans of Ormsby. In 1731, Mr. Stephenson jr., (son of the one named before,) removed from Acklam to Ketton in Durham, and took with him the cattle descended from the original cow got of the

Aislabies; and he took no others than those so descended in the *female* line only. Mr. Stephenson of Ketton and his son, remained at Ketton until the year 1765. From the last Mr. Stephenson of Ketton, Mr. Hunter of Hurworth, procured the grandam of the celebrated bull *Hubback*, (319,) and she and of course her grand *son Hubback* were of this tribe.

In 1739, Mr. Stephenson of Ketton, sold to Mr. Pickering of Foxton, a female of the Studley or Aislabie tribe of cattle; out of this cow he bred, by the Studley bull, the cow Tripes. Mr. Pickering sold Tripes to Mr. John Hall of Haughton; Mr. Hall bred Duchess of Atholl, got by Harrison's bull, (292) out of Tripes; and out of Duchess of Atholl, he bred Beauty, got by Masterman's bull, (422). On the death of Mr. Thomas Hall, Mr. Alexander Hall succeeded to his estate, and he bred Brighteyes, by Snowdon's bull, (612,) out of Beauty by Masterman's bull, (422,) and out of Brighteyes by Snowdon's bull (612,) he bred Brighteyes by Hubback, (319). Brighteyes by Snowdon's bull (612) and Brighteyes by Hubback, (319) were sold by A. Hall, to Robert Colling of Barmpton. Mr. Colling bred Brighteyes by Favorite, (252) out of Brighteyes by Hubback, (319); and out of Brighteyes by Favorite, he bred Princess, by Favorite. (252). Princess was sold by Robert Colling to Sir Henry Vane Tempest, Bart. of Wynyard. Sir Henry bred Anna Boleyne, by Favorite, (252), out of Princess; and Angelina by Phenomenon, (491), out of Anna Boleyne. Sir Henry died in 1813, and his widow, the Countess of Antrim, in 1818, sold Angelina to Mr. John Stephenson, of Wolviston. All the sires and dams in the pedigrees of these imported cattle (which were bred by him) occurring after Angelina, except Mameluke and Fourth Duke of Northumberland, were bred by Mr. John Stephenson.

I give the certificate of Alexander Hall, as to this tribe of cattle. The facts in relation to the Stephensons, of Acklam and Ketton, were obtained from the papers of the late Dr. Stephenson, of Heddon, who was born at Ketton in 1745.

Mr. Hall says: "Mr. Charles Colling bought a heifer of me, got by Mr. Fawcett's bull, afterwards called Hubback, (which heifer bred the bull Foljambe.) This heifer's dam was got by a bull owned by Mr. C. Colling, senior; the grandam was got by Mr. Harrison's bull, (292) out of Tripes, by the Studley bull, (626.)"

"Mr. Robert Colling bought a twin heifer of me that was got by Mr. Snowdon's bull, (612,) the sire of Hubback, and also a heifer calf got by Hubback out of her; and he bought her sister a year or two after, which he fed off, and she was an extraordinary fat one. Their dam was got by Mr. James Masterman's bull, (422,) and was out of Mr. Thomas Hall's cow, sold to the Duchess of Atholl. This last cow (called the Duchess of Atholl) was got by Mr. Harrison's bull, (292,) and was out a famous good cow of Mr. Thomas Hall's, that was a great grazier and was called Tripes. Tripes was got by the Studley bull, (626.)"

"The dam of the twins, sold by me to Mr. Robert Colling, getting only grass, with no other food, gave eighteen quarts, ale measure, of milk, at a milking, or thirty-six quarts a day for six weeks after calving, and did this two years in succession, having twins each year. I sold her milk at Darlington (two miles from Haughton, where I lived) twice a day, and it was measured."

"Mr. Robert Colling called the first twin heifer that he bought of me, Bright-eyes, for the reason that she had remarkably bright eyes. The grandam of this Bright-eyes, and the grandam of Haughton, (Foljambe's dam,) were both by Mr. Harrison's bull, (292,) and were own sisters, out of Tripes."

"I bred a fine cow out of Bright-eyes' dam, that was put dry of her milk in October, and sold to the butcher on the first Monday of March following, at twenty-five guineas, and weighed eighty-four stone (1,176 lbs.) in her four quarters, or beef only."

"My brother, Mr. Thomas Hall, bought the cow Tripes from Mr. Charles Pickering, of Foxton, near Sedgefield, who bred her; and her dam was bred by Mr. Stephenson, of Ketton, of whom Mr. Pickering got her."

"Mr. Thos. Hall sold a sister to the dam of Bright-eyes for twenty-five guineas, to go south. Another one half sister to the dam of Bright-eyes, was sold to Mr. Hill, of Blackwell, for twenty-five guineas; and she bred a heifer that was matched against one owned by Mr. Hammond, of Hutton Bonville, and won the match. Mr. Hammond's stock, at that day, were in great repute."

"I bred many extraordinary cattle from this tribe of short horns, and sold them at high prices for those days."

ALEXANDER HALL.

Mr. Bates, the celebrated breeder, used the blood of Mr. Stephenson's herd, with signal advantage. He bred his herd mainly to Mr. Stephenson's bull, Belvedere, from 1831 to 1838, and his prize animals got by Belvedere were numerous and extraordinary for their excellence. Among these were the very distinguished bull, Duke of Northumberland, (1940,) winner at the great English show in 1839, of the 1st prize; and 1st prize at York in 1842; Duchess, 34th, winner at York in 1842, beating Mr. Booth's celebrated cow Necklace, (which won nineteen premiums, and was never beaten save this once;) Duchess, 43d, winner of the 1st prize at Oxford for yearling heifers in 1839; Duchess, 42d, winner of 1st prize for in-calf heifers at Oxford in 1839; Princess of Cambridge, winner of the 1st prize of cows at Cambridge, in 1840; Duchess, 43d, winner 1st prize as best cow at Hull in 1841, and Duchess 42d, of 2d prize for cows at same show. Mr. Bates's bull, Duke of Cambridge, won 1st prize as bull calf at Cambridge in 1840, and 1st prize as a yearling bull at Hull, in 1841; and he was got by Duke of Northumberland, dam by Belvedere, grandam and great-grandam by Waterloo.

Such is the history of this tribe of cattle, and of the animals in particular, which Col. Sherwood and myself have imported from Mr. Stephenson and Mr. Bates.

A. STEVENS

NEAT CATTLE OF THE UNITED STATES.

[Communicated by a Member.]

It is proposed to show, in this article, the advantages to the farmer of cultivating the native breeds of stock or cattle, for his farm. What we mean by native breeds is not only those purely native, and that have been so for many generations in both lines of ascent, but the various mixed breeds, or as they are usually called, *grade stocks*, obtained by crossing the pure native with the best foreign breeds, and creating a new race or class of native breed, and having their origin here and with a view of improving both. The best native American breeds fifty or sixty years ago without a particle of intermixture with any of foreign origin, or any thing of a recent foreign origin were properly bred, reared, and taken care of equal for all important purposes to any in the world. As milkers, as working cattle, they were certainly not inferior to any of that day; perhaps for butchers meat they might have not been equal to some foreign breeds, and this, not so much because they were not susceptible of it, but we were a young country, and could not generally afford to spend the time and money which the English and some other foreign nations did in feeding and preparing their animals, and making them *hog fat* for market. We could not get so well, or not well enough paid, at that day, for the labor and expense of such a system. Single cases are recollected and could be cited, where oxen, cows, heifers, and steers, more than fifty years ago, were made as fat and as fine beef, in every way, and with expenditure of as little time and money in doing it, as in any European country of that day. The original stock came from Europe, and more especially England, perhaps nine-tenths of it, and at different periods of the last two or three centuries. Some of these, no doubt, were of the best breeds then known in England, and the race were supposed, by some, to have improved here after it got acclimated, and with the care and attention bestowed upon it by our Anglo-Saxon ancestors, not only as milkers, but also as beef or butchers' meat.

Such a foundation would be the best in the world to build upon, either by perpetuating the old race without any mixture of foreign, or by crossing it with the best foreign breeds; either would do, as either would make a good race. The great object with all animals, human or brute, on emigration, or importation, is to acclimate them; to accustom them to the climate to which they emigrate or are removed. It is usually observed by the best physiologists, that there is a shade of difference in all climates; those situated far apart and in the same latitude, are often very different, and there is considerable difference often found in places quite near each other, so as to affect the health of man and animals, in a greater or less degree, on a change or removal. Sometimes, in places quite near, it is owing to local causes which are easily ascertained, at others, to supposed or speculative causes, when the true one may be a mere change, and requiring a residence for a time to habituate the person or animal to the real or supposed causes of unhealthiness

The second generation are often improved by the change in all the attributes of health, such as strength, hardiness, size, and activity. It is now well settled, by the best farmers and graziers, both scientific and practical, and those who have written most ably on the subject, that the best breed of cattle that now exist in Great Britain, and which are equal to any in the world, have been matured and acquired within the last fifty or sixty years. This has been effected by various crossings of different animals of the best stocks of some of the southern counties of Scotland, with those of the northern counties of England. This, we believe, was the beginning of the improvement.

As an instance, and to show how it commenced and progressed through the United Kingdoms, we will take the famous Durham breed. The late Rev. H. Berry has, perhaps, given the best history of its rise and progress. "Durham and Yorkshire," he says, "have been famous for ages for a breed of these (Durhams), possessing extraordinary value as milkers." "Which qualities," Mr. Youatt, who wrote some time after, says, "taken as a breed, have never been equalled. The cattle so distinguished were always, as now, very different from the improved race. They were generally of large size, thin skinned, sleek haired, bad handlers, rather delicate in constitution, coarse in offal, and strikingly defective in substance of girth in the fore quarters. As milkers, they were most excellent, more for quantity than for quality. When put to fatten, as the foregoing description indicates, they were found slow feeders, producing an inferior quality of meat, not marbled or mixed as to fat and lean, the latter sometimes of a very dark hue. Such, too, are the *unimproved* short horns of the present day. About the year 1750, in the valley of the Tees water (Durham), commenced that spirit of improvement in the breeders of the old short horns, which has ended in the improved modern breed."

Many gentlemen were zealously engaged in this; among others, Mr. Colling. He produced by judicious selections and crossings, the celebrated bull "*Hubback*," from whom are descended the best short horns of the present day. Of this breed were the two famous Durham oxen, which long travelled through the country and were shown at fairs, and were superior in weight and size to any known at that day or before, (1802,) weighing 4,480 lbs., the largest one.

Some of these unimproved short horns were crossed by breeds from Galloway, Ayreshire, and other parts of Scotland, with great success. The Scotch breeds are smaller, more hardy, good milkers, more distinguished in this for quality than quantity; fatten easily, and make good beef.

These *improved* Durham races have spread more or less through England, Scotland, and perhaps Ireland, and improved still more probably, by various crossing with the best breeds in all these countries. Climate, pastures, feed, and care, generally, would contribute towards improving them still more. Thus this famous race of Durhams progressed from generation to generation, each succeeding race considerably better than the preceding, until they reached the perfection of the present day.

So with other celebrated breeds of cattle in Great Britain, the Devon, the Leicestershire, Hereford, and Alderney; some of these are distinguished for milk, others for fattening as beef, and others as working oxen; all, no doubt, more or less improved by judicious crossings of eminent breeders at different periods with some of the best breeds of the three kingdoms.

Animals, and especially neat cattle, are attached to locations where they have their origin; they get enured to the climate, feed, and kind of care bestowed upon them; and these cattle would be likely to be improved by all good husbandmen, who would keep pace with improvements in this, as with everything else; thus each succeeding generation would be more healthy, grow more vigorously, and be more useful and more profitable to their owners.

It is contended here that the Americans, by pursuing a similar system, might have raised up a breed equal to any in Great Britain; they had as good a foundation to commence upon! It may be said to have been the same. Here is where our various breeds originally came from. Our ancestors, most of them, emigrated from England, Scotland, and Ireland, and brought with them from different places in all these countries their cattle of every species, as well as farming implements.

Some of the former, no doubt, consisted of the same breeds and blood that our English friends originally possessed, and which we might, and, no doubt, in some cases, have improved upon by judicious crossings, feed and care, and attained a perfection in breed equal in every respect to them.

We are searching our own country through, and buying at great cost animals of the same stock from which ours sprung. But this is not the worst, we are chasing the seas over at a still greater expense, and to be certain that we are not deceived, to purchase on the very soil and homestead of the animal, one superior to anything we left behind.

His genuineness to be further authenticated by a herd-book, enumerating a long list of progenitors in both lines. The cost of transportation and risk of a long journey by land and water to be added to that of the animal or his stock, when offered for sale here. No blame is to be attached to those who show this spirit and enterprise, on the contrary it is to be commended, the blame lays with the great body of our farmers in not taking the necessary pains to cultivate the best breeds at home. These are equal, naturally, in every respect, to our English friends; their origin being the same, all it wants is similar judgment, care and assiduity in breeding, rearing and keeping them, this has been done by some at different periods and in different localities of our country, as we shall show. The Oakes cow, Danvers, Mass., is well known in our annals of great milkers, and a native; in 1815, she produced 484½ lbs. butter. During this time one quart was reserved daily for family use, and she suckled her calf four weeks. She produced in one week 19½ lbs. of butter, and an average of more than 16 lbs. of butter per week, for three months in succession. A cow at Greenfield, Mass., in 1830, from March 27th, to May 25th, made one hundred pounds of butter, and reserved 160 quarts of milk. In 14 days she made 29 lbs. of butter. In Dorchester, Mass., there was made from a cow before grass feed, in April, 2¾ lbs. of butter, with 2 quarts of cream, only two or three minutes in churning. A cow in North Adams, produced lately, 425 lbs. of butter, 400 lbs. of which were made in 9 months. A cow of Shelburn, Vermont, has yielded 26 quarts in a day, and at two milkings in 24 hours, were made 3 pounds 14 ounces of butter. This cow was bred in Vermont. A cow of S. Henshaw, Springfield, 17¾ lbs. of butter per week, and in one case, 21 lbs. of excellent butter. Another of D. Morris, same place, 7 years old, produced in five months between the 1st April and Sept., 206 lbs. During the time, says the owner, we used milk and cream in the family freely; some weeks we have made 14 lbs., exclusive of milk and cream used for family purposes. This cow had always been a good milker, milked quick at regular hours, and to the last drop, strippings the best. Food in winter good hay, and from 2 to 4 quarts of rye bran at noon, water three times a day. In summer besides pasture, 4 quarts of rye bran at night. The owner further says: from his own experience, "he feels quite sure that many cows which have been considered as quite ordinary, might, by kind and regular treatment, good regular feeding, and proper care in milking, (each of these last highly important,) have ranked amongst the first rate." These samples, it is said, are all purely native cows, and taken principally from the late Mr. Colman's statistics of cattle, but more particularly of cows, and there is no better authority. There will also be found in the various works of the same author, the average produce of dairies in Berkshire, Cheshire, and some other counties of Mass., at about 425 lbs. of good cheese, and if butter is run upon, about 210 lbs., and 2,200 quarts of milk to each cow, the season or year. This average differs very little from the average produce of the best dairies of Gt. Britain; so little as hardly to make it worth noticing. In Connecticut, New-York, New Jersey, Pennsylvania, and some of the Western States, especially Ohio, the average produce of the best dairies is very similar to the above. This may be easily ascertained by consulting some of the agricultural periodicals of the day, and also Transactions of the State Agricultural Society of New-York, where some reliable statistics may be found.

The points of a good animal of the improved race of Yorkshire Durhams, as given by the best and latest English writers, say, "a milch cow good for the pail as long as she is wanted, and then quickly got into marketable condition, should have a long, with rather a small head, a large headed cow will seldom fatten or yield much milk. The eye should be bright, yet with a peculiar placidness and quietness of expression, the chops thin, and the horns small. The neck may be thin towards the head, but it must soon begin to thicken, especially when it approaches the shoulder. The dewlaps should be small, the breast, if not so wide as some, should not be narrow, and it should project before the legs, the chine, to a certain degree fleshy, and even inclining to fullness; the girth behind the shoulder, deeper than is usually found in the short horns; the ribs spread out wide so as to give as globular a form as possible to the carcass, and each should project further than the preceding one, to the very loins, ribbed, as is called, home; common consent has given to her large milk veins; a large milk vein indicating a strongly developed vascular system, one favorable to secretion, and to that of milk among the rest. The udder should rather incline to be large in proportion to the animal, but not too large; skin thin, and free from lumps in every part of it, the teats of a moderate size. The quantity given by some of these is very great; it is not uncommon for them, in the beginning of summer, to yield 30 quarts a day. There are rare instances of their yielding 36 quarts; the average is about 22 to 24. The milk, however, is not so rich in its produce of butter as the long horn, the Scotch, Devon or Alderney."

This Yorkshire Durham breed is probably more universally spread through Great Britain than any of the choice breeds. Its points for fattening are generally allowed to be superior to any other. The samples of native American cows, as cited, are certainly very little, if any, inferior to these; if there is any difference it may be ascribed to the keeping. The English here furnish an example to be admired and followed. In the first place they spare no pains or expense to get the best breeds for milk and fattening, will go any distance in their own country to procure them to cross with their own on their farms at home. In feed and shelter they are equally assiduous and pains taking; they cultivate the most nutricious grasses, their moist, temperate climate favors the growth of these and preserves them in their green succulent state through most of the season; change often their feed, as well in grains and the more substantial aliments, as in their pasture fields. This is done for the benefit of their manure as well as cattle—the richest feed always makes the best and most efficient manure; protect them well from the weather in winter by covered stalls and stables, gutters, pipes, tanks, pure water, cleanliness, and every convenience for the comfort, health and thrift of their animals, and these not only to enrich but preserve and increase their manure. If we do not take the same pains in all these things, we are doing much better than we formerly did. Indeed it was necessary, we have been driven in a measure from the wheat and flour market by our western friends; let us not lose the cattle market too. The butter, milk and fruit market we cannot very well lose, although we may have inroads made upon these for a while by the increased facilities of travel and conveyance, until the population on the seaboard grows up to the supply, and the demand is ample for all; besides, railroads are available to us and bring us nearer to the market too. The expense of travel in any way must be added to the cost of an article, and however small, it is something and deteriorates somewhat from the heat and fatigue of travel; especially the cattle, these will want our pasture fields and grain for awhile to rest and recruit them. If years ago our farmers generally, and some of them no doubt did, had taken similar pains to procure the best breeds in their neighborhood, and at a distance, they could hear of to cross with their best at home, they might have had a stock now nearly or quite equal to the Yorkshire Durhams.

This is the way the English began in the valley of the Teeswater (Durham) as stated. The famous Oakes cow, Mr. Jaques' cream pot breed, the Springfield cows, and a number of others individually cited, (American) as well as large farm daries in whole sections of our country, are equal in the production of milk, cheese and butter to any of the improved Durhams. Ours are not known by those who made it their business to inquire and ascertain the fact to have a drop or particle of any blood in their veins but the best native blood of the country and neighborhood where they were bred and reared—some of these of fine form and others not. Indeed we know from unquestionable sources, and many farmers advanced in life, in almost every part of our State, at this day will tell of cows of the most ungainly appearance in their dairies within the last sixty years; some so devoid of symmetry and proportion that they might almost be mistaken for a different animal, big, uncouth heads, large bones and these prominent, long irregular horns, hide thick and lumpy, hair long, coarse and knotty, hips projecting some inches above the body and looking as if ready to burst through the skin, back bone the same and knobby, legs long, lean and crooked, and a little thin withal after passing the winter, so that altogether, in the significant language of the barn yard, she might be pronounced an "ugly, scrawney, mean looking *critter*." After calving in the spring and slopped a little she has been put in first rate pasture in May or June, and would yield for two or three months from twenty-four to twenty-six quarts of good rich milk a day. No indications of the milker except in her bag, teats and milk vessels, and these not very striking until she reached the pasture fields.

Nearly or quite a century ago, traditionary records in families—not to be doubted any more than the birth of a member of the family, which is generally recorded in writing—of cows coming forth from their herds, bred, reared, and well taken care of from calves, handsome in form, producing from 27 to 30 quarts a day of the richest milk. This has occurred in our own State, in Connecticut and other Eastern States, and no doubt in some States south of us. This was before the improved Durham race was known, even in England, and was considered extraordinary at that day and would be now. Would it not be best, then, to cultivate by crossing these breeds with some of our best natives than some of the best foreign? The one possessing symmetry of form is preferable to the ugly, unsightly one; as we should be more likely to get from this a better race for fattening and work, as well as milk. We think it would be preferable; such a breed would be inured to our climate, having always been in it for many generations. It would be considerably cheaper, as we should not have to pay for the expense of importation, and the additional value which novelty and fashion, with some of our plain republican population, throw around everything of foreign origin. These two circumstances, acclimation and cheapness, ought to have considerable influence with our farmers at this time. The first is important for the health, hardihood, and thrift of animals, and the last for the health and thrift of the farmer's purse. We are not apt to think anything so extraordinary that occurs near us, and that we are familiar with, as when occurring at a distance and in a foreign land. This circumstance alone often blinds us, and makes us overlook merits because they are common; and we imagine these only to exist in things beyond our reach, and whose reputation we hear of through impure channels, and see emblazoned upon paper, and put in motion by the interested and selfish both at home and abroad. From what has been said, it may be inferred that there is no certain rule, especially as regards milkers, about the great race they sprung from; that one of these may come out from a herd whose descent cannot be traced to any source, by any line—possessing beauty of form or great milking powers—that may possess one or both of these in a high degree. Indeed, we will venture to say that the last class of native cows which possess symmetry of form and milking properties that the owners or families of that day knew nothing, or very little, about the breeds from which they sprung, and cared as little about it. All they knew was, that such an animal came out of their herd, and all they troubled themselves about was to have as many calves from her as they could from crossing with the best of their own herd or some of the neighboring herds.

Look at the celebrated Cramp cow of England, one of the greatest milkers on record of any country or age. In 1808 she produced 5,782 quarts of milk, and 685 lbs. of butter. This cow was bred in Lewes, Sussex. We have never heard or seen it alleged by any one that this cow was descended from any of the great breeds which those of the present day are descended, nor do we believe she was; these breeds had not attained their greatest celebrity until some years after 1800. Besides, in her history, it is expressly said that she was of the Sussex breed, and all the English agricultural writers that we have seen and who speak on the subject, say that the Sussex breed were never famous for milkers, but were considered good fatteners. Mr. Colman thinks the old stock of New-England must be of the *North Devon*, as many of them possess points resembling that race, and have been frequently called *American Devons*. The most valuable working oxen are chiefly of this breed, and which also contribute materially to the display of beef in the New-York, Philadelphia and Boston markets. "The prevailing color of the New-England cattle is deep red. The oxen are remarkable for their docility, strength, quickness, and power of endurance; the cows are fair milkers, and both are hardy and fatten readily." In oxen we think we fully equal our English friends in form and appearance, and go ahead of them far in disciplining these animals to the yoke and fitting them in a short time for performing every kind of hard labor in husbandry in the best manner. A good pair of these or a number of yokes together, and driven and managed by one who knows them, and they him, will travel faster with a heavier load without fatigue, and at considerably less expense, than any horses. Such is their discipline and steadiness of character that they will exert their strength longer and in unison; single pairs, or almost any number of pairs, step more uniformly every way, back and forward, not thrown out of line or in the least confusion, no more than a regiment of the best drilled troops. Mr. Colman has seen, a few years since, nearly three hundred yoke of these together in Connecticut, for exhibition at a fair, remarkable for their uniform color, (red,) symmetry of form, size, and every mark of strength and hardiness. Such a race, we maintain, could not have had a mean or common origin; they have existed more or less for a 150 years, as tradition and other records will show, improved, no doubt, much in its progress down to the present day. Such a race too must have contained among it at different periods, animals valuable for milk and fattening; indeed, the oxen here described attest it possessed the latter. We think we may challenge the world to compare or equal us in working oxen. No cattle can work, fatten, or give large quantities of milk, without plenty of feed, and this good, and taken quietly and at their ease; in this, too, (feed,) we abound, if only properly managed and judiciously distributed. The English, as we have observed, surpass us in the care bestowed upon their animals, especially cattle for fattening, and owing to this, perhaps, they have a greater number of superior ones than we have. We can cite many cases of as large and as fat animals as ever they produced, and if they are not of the pure native breed, they are mixed and produced by crosses of the best improved foreign, and some of our best native breeds. When we say foreign, we do not mean they had their origin abroad, but they descended from those that had, and some instances may be given of as good from the pure native breeds. We will name two or three samples, and numbers might be cited. The ox Leopard, of Bridgetown, N. J., in 1812, weighed 3,360 lbs.; a pair of cattle bred at Woodbury, weight of the two 6,082 lbs. in 1837; a calf, purely native, bred and fattened on the banks of the Hudson in our State, and took the premium at a county fair, and sold when two years old in 1844, weighed 2,000 lbs. At the fair of the American Institute, in 1850, a pair of oxen, bred and fattened on the banks of the Hudson, and took the highest premium, weight 6,580 lbs., and purely native. The mammoth ox, Red Jacket, also exhibited at the same fair, weight 4,500 lbs., and believed to be the largest one on record. The most profitable cross for our farmers, if they do deal in foreign breeds, as experience has fully shown, is to cross with the best of these after the first generation, on the best natives; the former then get inured to our climate, feed and manners of treatment. Habit has much to do with everything that has life, plants as well as animals. Our friends of the west, especially Kentucky and Ohio, have cultivated largely the Durham breed; these make fine, handsome cattle, and fatten easily on their rich pastures. They are delicate though, less hardy, and cannot stand the fatigue of travel to the eastern markets like the natives. The former lose more flesh, and get diseased, have affections of the liver, owing, it is thought, to the water of the west; feet get tender, often so bad as to lay them up on the road. These are all considerable drawbacks on the profits of the drover and grazier. Our flies are harder upon our cattle than they are in Europe, especially in England; we have more hot sun, these affect the delicate thin-skined Durhams most; indeed, all suffer by them more or less. It is a common saying among our farmers, that their cattle "do not do so well in fly-time." They are more disturbed in their quiet and feed. Our farmers must and will exercise their best judgment in these matters; all we can say is that beauty and appearance in animals are very desirable, but profit, we think, must and will have some weight with them as with most people in every business, and it will not only weigh, but preponderate in the scale of profit and loss.

AMERICAN GRASSES, MANURE, AND INSECTS.

[Communicated by a Member.]

We embrace these three subjects in the same article, intending the grass for the principal one; manure and insects as merely incidental. These latter are important in the relation they bear to the former; manure makes the grasses grow, and increases them much; insects injure and destroy the grasses. It is essential then for us not only to find or point out what will be the best soil and food for the latter to secure the heaviest and most nutritious crops, but how we can best combat their greatest enemy, the insects, and kill them, or at least diminish their numbers so far as to make them much less destructive. If we can throw no new light on the various matters here inquired into, or our inquiries contain errors or inferences drawn, not warranted by premises or correct reasoning, we may induce or excite others more competent to come forward, and who are able to detect errors and enlighten and clear up what was before involved in doubt and obscurity. On this ground we invite opposition and scrutiny, and shall be pleased to have any errors of ours, in fact or reasoning, pointed out and corrected. With such a result, the public will be gainers by our agitating the subject, and we shall have ample cause for pleasure, as the public good is, or ought to be, the great object of every good member of society.

This collision of opinions on all important matters like these here agitated or inquired into, must be friendly to do good, intentions pure, and manner kind and courteous. In most of the common affairs of life, as well as those intimately connected with science like agriculture, the best people differ much in opinion; truth is often elicited by this difference or oppcsition, and error or falsehood disappears before its light.

The grasses that naturally spring up and grow on high ground or mountainous regions, are often the best for producing rich milk and the sweetest butter.

The highlands of Scotland are famous for the richness of their milk and the high flavor of their butter. The cattle fed and bred about these regions, are generally not so large, more hardy and compact in their frames, fatten quick, and make delicious beef, especially when removed for a short time on the luxuriant pastures of the lower grounds. The cows do not give so much milk as other breeds differently located, but they make up in quality what they want in quantity. These high ground grasses spring up naturally and mostly without cultivation; are short, but juicy and nutritious; neither are they so thick on the ground as the grasses of the cultivated lands below. The grounds are mostly moist and loose, get very little manure except from decayed leaves and old wood. Hence it may be said the plants that grow upon them are in a great measure the products of nature in a wild state, and if they have not the hand of man to soften and tame their wildness, they do not suffer from his mismanagement and errors of judgment in culture. The valleys and hill sides of these regions are often made rich by nature; streams flow down upon, and through them; springs burst out from their sides, formed by rains issuing from the clouds which almost continually hang over and upon their summits. These carry down the debris or ruins not only of rocks but of various vegetable substances, and deposit them on the side hills and valleys below as manure, and of the best kind, mixed and compounded by the unerring hand of nature. These valleys contain none, or very little of the sour, coarse grasses which infest the wet swampy grounds below, and which cattle will not touch if they can get anything else, and then only to prevent them from starving, so deficient are they in flavor and nutriment.

A considerable portion of our highlands on the Hudson river contain many such valleys and side hills, and have some very good farms in and upon them; they grow the best of these natural grasses, and as much grain as the owners want for domestic consumption; the great object is the dairy, and no better butter and cheese, especially the former, upon which they chiefly run, can be produced in this or any other country. Fruits, too, apples, peaches, pears, plums, &c., large and high flavored, and not so liable to be cut off by changes of seasons and some other causes as below. We speak of these from personal knowledge, as we have often traveled through parts of these mountains, been upon some of these farms, examined and admired them, and been refreshed by some of their delicious products. These mountain grasses would not grow as well on the grounds below, or if they would, (and no doubt there are some there similar to them,) they lose the sweetness which they possessed on the mountain hills and valleys; rich manures and the system of low land culture adulterate their juices and render them less palatable to stock. Plants, like animals, have their habitat or home; they get accustomed to this home, and are more tenacious of the habits acquired there, and cling more to them than animals. Hence, on a removal to a short distance only, unless done with the greatest care, they degenerate somewhat in their new home, and must get domesticated in it to thrive and do well. The ancients were well aware of this, and Virgil, nearly two thousand years ago, advises in transplanting from one locality to another, whether distant or near, to mark on the shrub or tree, removed, the sides exposed east, west, north and south, and expose the same sides to the same quarters in the new locality. He farther advises a removal of a portion of the earth in which they first grew to their new home, and bed, as most congenial with their habits, and they would be more certain to take root and grow. Grasses are often, as is well known, transplanted, to form a new bed of turf or sod, and much of the old one adheres to the roots and is carried with them on removal. The grasses which are succulent, and have the largest stems and many joints, and these rather large, something like the Indian corn plant or sugar cane, generally contain the most sacharine, or sugar and mucilage. When the structure is of a light glaucous or sea green color, the sugar is generally in excess.

Grasses which have culms or stems furnished with numerous joints, leaves smooth, succulent flowers, in a spike or close panicle, flowerets blunt and large, contain most gluten and mucilage. When the structure is of a glaucous color, and the flowerets woolly, sugar is in the next proportion to mucilage. Grasses, with strong, creeping roots, culms few, flower in spike, contain the greatest proportion of bitter extract. It must be recollected that sugar and mucilage are the most important ingredients in the grasses. *The sweet scented vernal grass* is considerably esteemed, not so much for its nutriment as for its fragrance. It has been analyzed and found to contain less of the former than several other kinds. It has been found in Europe by intelligent, practical farmers, that cattle do not eat so freely of it nor relish it as well as several other grasses. Sheep, it is said, will not touch it. This shows that it is not always the sweetest and most brilliant flowers that are most useful. It abounds, more or less, in most good meadows mixed with other grasses. It is supposed, by some, to give to hay its fragrance. This is mere supposition, as we think all the nutritious grasses, if properly cured, would have a similar fragrance, if there was not a spear of vernal in them. There is considerable of it in the rich pasture fields of Pennsylvania, mixed with other fine grasses; some think it gives to Philadelphia butter its fine flavor; it may be so, but we think its superior flavor due more to other grasses as cows prefer these, and consume more of them. Sinclair, Donaldson, and some others, place it in the lower order of the better grasses; these last undoubtedly have some influence on the flavor of butter; but this, we think, is owing more to a combination of causes for which our Pennsylvania friends are famous in the manufacture of their very superior butter.

The annual meadow grass is the most common of all grasses, being the first herbage with which nature covers the earth, the root is annual; it is said to be almost the only grass that will grow near works and places where the smoke of coal abounds. For this we cannot vouch, we should incline to a different opinion until we had further evidence. As the ashes of hard coal in a proper state will benefit more or less most grasses; although not as much as wood and vegetable ashes if so we do not see why the smoke should be prejudicial. Though an annual grass, it is found in most meadows and pastures perpetually flowering, and affording an early sweet herbage, relished by all stock; it is said birds are extravagantly fond of it. It hardly requires sowing, as it spings up every where of itself, partly from its dispersed seeds, and partly from its roots and stems; although called an annual it's habits are more like a perennial. It is short and belongs to the dwarf class. The English think highly of it both for pasture and hay, especially the former; its shortness is an objection to it for the latter. It is very prolific, grows naturally in all good meadows, mixed with other grasses, with little trouble; most good meadows have more or less of it in; milch cows are very fond of it; it is said to increase and enrich their milk, and add to the flavor of their butter. A few persons do not think so highly of it.

Italian rye grass is cultivated in Italy, France, and other parts of Europe. There are a great variety of the rye grasses, and some of them great favorites with the farmers of Great Britain, others not as much so; it depends, they say, a good deal on locality and soil, and some of them will not thrive under a sudden change of locality, but dwindle, and run out, or disappear. In our country it has never been much cultivated, and when it has, we believe not with much success; at any rate, not with enough to increase and spread its cultivation. The Italian variety is said to bo among the best, if not the very best. In a number of the British Farmers' Magazine, published a few years since, it is said: "This (Italian ryo grass) has been tried for four seasons, and proves to be superior to every other grass for winter, and much the earliest for feed, of any grass in the spring; but what renders it still more valuable as a feeding grass is, that it is preferred by cattle to any of the common sorts, a fact which has been proved by experiments in various parts of the country; and the rapidity with which it again shoots forth, after having been mown or fed off, renders it particularly advantageous for light soils, as the common rye grass never sends forth a second crop, either for feed or seed, of any consequence. In poor land it may be safely sown with clover, as it has been on the Continent, to the great increase of the crop and benefit of the quantity of the hay." Sir J. Sinclair, one of the greatest scientific and practical farmers of his day, says of it (Italian rye grass): "It is a matter of astonishment it should not have been long ago introduced into this country, (England,) and cultivated on an extensive scale. If sown in autumn, after a crop of potatoes and other roots, it produces a crop next spring fit to be cut for soiling cattle, 8 days earlier than lucern, and a fortnight before red clover. Care must be taken, however, to have good seed—*the Italian, and no other variety*—and not to sow it too deep. It produces two excellent crops in one year, the first of which should be cut as soon as it comes into flower, and the second will produce a considerable quantity of seed. From its early growth in spring, when other articles for feeding stock with advantage are so difficult to be obtained, it is likely to become a valuable acquisition to British husbandry." These authorities are cited to show the reputation of the grass in England, and whether our farmers would think it an object of cultivation here. Donaldson, one of the latest writers on the grasses, says: "Its durable quality remains to be proved, and, like other foreign productions that are cultivated in our latitude, it may soon become acclimated and reduced to the standard of fertility that is fixed by soil and climate, and ordinary cultivation." If it grows so well and is so popular on the continent, especially France and Italy, we should think it would suit our soil and climate better than those of England, and that it would become acclimated sooner here than in the latter place. Whether it has been tried to any extent among us or at all, we cannot tell. *As to barn yard manure for the grasses*, this is one of the best, and under all circumstances the very best for our farmers for all crops and for their land generally, there are perhaps many artificial and special manures which exceed it in strength and portableness, but none that equal it in cheapness and durability. Several other kinds as manufactured, and prepared are rendered more portable and made comparatively easy of conveyance to and from distant points, this the farmer has to pay for, and often pretty dear, and runs the chance too, of being imposed upon in not getting in any respect, the article agreed for, or of getting it in an adulterated state, and very inferior in quality. These hazards, besides the first cost, often makes the article come much dearer than his own, which is made on his premises and which he konws all about. The *first cost* too often makes his purse much *lighter*, if the article lightens the labor of his men and cattle in moving it about. The farmer frequently gets no return for this *lightness* if he uses the foreign or manufactured stuff it extends to his crops, and they are *light* of course, he cannot replenish his purse and restore *weight* to that, which makes the whole operation *weigh* pretty heavily on his feelings. These disappointments often occur in Europe, with those who are better acquainted with these chemicals, or as they might so be called, mysterious compounds, that are manufactured and sold for manures. If some of our European friends don't know themselves, they have the means of knowing generally at hand. Take the old fashioned barn yard manure, and this every farmer does, or ought to, know something about; this if properly preserved and applied cannot fail. It contains more or less of all the ingredients which plants require as food. Occasionally from some particular causes one of these ingredients may be wanting in the soil or manure, or there may not be enough of it for the healthy growth of plants, if the farmer cannot tell what it is, let him employ a competent chemist and he will soon tell whether it is lime, phosphate of lime, or bone earth, gypsum, potash, charcoal, or any thing else. These are all plain articles easily procured and known, and there cannot be much cheating in furnishing them, and not any with a little circumspection.

Donaldson says: "the putrescent mass (meaning farm yard manure,) of animal and vegetable matter, properly prepared and applied, beats every other manure yet brought into competition with it; we often find failures in the effects of other substances, but none from that article. Somo substances are equally quick in effect, but none so lasting, leaving an earthy residuum which adds to the staple of the soil."

As a general dependance, it is the best for grass lands, including permanent pastures; our hot suns do not permit them to be used at all seasons, or on all lands. In May, or about the first of June is the best time, just as the young grass starts or begins to grow; spread it right from the barn-yard, where it has been lying in heaps during the winter, about half or two-thirds rotted, well over the grass lands; the grass will grow up through it and get above it, it will soon sink and be washed down by rains about the roots. The rains will dissolve its soluble parts, which will enter the earth around the roots, and the pores of these will absorb or suck it in as they want it, and in a few weeks the benefit of the application will be seen by a vigorous start and growth of the grass, soon over-topping the neighboring grass where none has been applied. We have often, years ago, witnessed its effects on grass lands applied in a similar way, and no later than last summer we saw it exemplified on several farms we visited in June and July; some of the fields of these farms and meadows had cattle feeding upon them, others beside them not; there appeared to be little or no difference in the size or growth of the grass, all nearly quite alike. The fresh manure of the cattle dropt was added to that before spread, and this also would soon disappear and be lost amid the luxuriance of the grass. The effects of these fresh droppings appeared to make up for the loss sustained by feeding, and all seem to have a uniform height, color, and richness. No manure could be seen anywhere, unless the ground was pretty closely inspected, and then only a little of the coarser and more insoluble parts, and which required a little more time for solution, or unless the droppings were very recent and had not time to descend and disappear among the thick grass. We do not think a particle, or certainly not any worth estimating, could have been lost by evaporation. The sun could have none, or very little power on manure upon ground under such circumstances, and certainly not power enough to create ascending vapor from it and cause any loss from that source.

This land had been used to good husbandry, and often been top dressed in this way. It is very different with land with little grass upon it, and no soil, no heart to bring it forth and start it early in the spring; and perhaps never had anything, or very little put upon it to give it heart and soil, and what little grass there was upon it, fed close off the season through. Manure upon such a surface, exposed to a hot summer's sun, and nothing to protect it, would do very little good; its essence, or much the greatest portion would be lost by evaporation. Those who form it in this way, certainly have no right to complain of the uselessness of surface manure on grass land; such land can only be put in fine grass, by the spreading of a good coat of barn yard manure over it, and immediately ploughing it in, and that deep and thorough, and sowing it with grain and grass seed, the old fashioned way of restoring old worn out pasture fields. Some farmers put dung on their pasture grounds in autumn, near winter. This cannot be so good, it is spending the essence of the dung before the time required to give a spring to vegetation; it lays all winter in a passive state, that is, no action from it that can benefit plants. These are more than passive, they are torpid or temporarily dead, and no useful combinations can take place between them, the one cannot consume food, and the other is in no state to yield it. Donaldson says, "the application of dung to grass lands during the frosts and thaws of winter should not be practiced; the juices are washed away from the dung when the land is not in a state to receive it; rains and snows dissolve the subtances, and both elements are in a state where no useful combinations can be effected." He decidedly recommends the spring in preference to autumn or winter.

Insects.—Our grasses with all our plants suffer very much from insects, and this evil is increasing in our country; we have more heat in summer, than many parts of Europe, and this multiplies the enemy, makes them more active and vigorous, and more able to do mischief. As the population of our young country increases, our forests cleared up and cultivated, our plants increase in number and variety; the delicate flowers and seeds of the various grain, fruit and ornamental plants, afford a more abundant and palatable food; for this destructive enemy, like most animals, insignificant as he appears, has a choice of food, and selects the sweetest as well as the richest for his repast. If he follows in the track of industry and civilization, and lays waste the products of these, he does no more than more important beings have done, and for the same reason, as here he finds the choicest and most valuable spoils. Famine and pestilence in the old world have often followed on the track of both, and both in different periods have made the human race suffer for not checking him in season, but letting him become too powerful for resistance. Modern Europe has suffered frequently from the ravages of insects, and sections of it have more than once been desolated by them, and reduced to a state of famine or near it. Of late they have learned wisdom from their sufferings, they studied the character of their enemy, and combated him in every way when he threatened an invasion, and repelled him. The people of different neighboring districts, acted in concert, and by simultaneous movements attacked and crushed him, or as large a portion of him as they could. The public authorities paid them for these efforts, and employed men, women and children to join in the contest, and rewarded them according to the number or quantity of the enemy they slaughtered. They have gone further, they have encouraged and protected all the natural enemies of the common enemy. All birds and animals known to make war upon and kill insects and devour them for food, have been preserved with the greatest care, and not any permitted to be killed by sportsmen or others under severe penalties, and these enforced with rigor whenever the law was violated.

Our sister state, New Jersey, has lately set us an example in this respect; she has enacted laws preserving birds that are known to prey upon insects, inflicting penalties upon those who destroy them. Our State, and others, will be obliged before long to follow so laudable an example, if we wish to preserve our plants and fruits; some years the products of our agricultural industry generally are diminished almost one half, and a few entirely destroyed. Many of our farmers and people don't appear to be aware of the real cause of the injury, they are apt to ascribe it to something else, the season, or a neglect of doing at the proper time or manner what their soil and plants require. It is difficult to convince them that so small, weak, and contemptible an enemy can do so much mischief, such are his numbers, so quiet, untiring, and insidious is he in his attacks. We witnessed in June and July last the ravages of some of them, the *Aphides*, or plant lice, the smallest of the tribe, in myriads on the apple, cherry, pear, and plum tree leaves, and currant bush, aided by another small insect called the leaf-roller; the surface of the leaves was raised up in little ridges, and these on a close inspection appeared to be alive with animalculæ, the leaf brownish in color, something like the rust of iron, and partly rolled up, and some of them apparently dead, sap sucked out of them. Other tribes, large enough to fly, move about, and be seen distinctly, the wingless tribes too, such as crawl or creep, most of the ant family, some of the worm class, were seen running up and down the bodies and limbs of the trees and eat holes into these, enter them and live in their wood; others infest the bark and crevices of trees, all living and breeding in and about the tree, and all equally busy in the work of destruction. The little birds, their great enemy, were not idle, they were equally busy, the wren, the king bird, the woodpecker, and cat bird, catching the flyers and picking the crawlers from the bodies and limbs; some would thrust their bills under the bark and in the crevices and holes and drag out the culprits and devour them or carry them to their young; others scrape the plant lice and pick the leaf-rollers from the leaves in which they were coiled, and make a meal of what appeared so small as hardly to possess life. The crow, black bird, and other kinds, were seen following the plow and scratching the newly plowed earth for the insect foe in the worm state and destroying him. We have it from the most unquestionable authority, as well travelers in whom confidence may be placed, as from journals of the west, that some of the western states have suffered greatly from insects the last summer, (1850); some counties in Ohio have been literally in their grasses, Indian corn, and some other plants laid waste, and that chiefly by the common grasshopper, called in Europe the locust. We have seen in some of these journals that Indian corn, and grass or hay have risen greatly in value, and especially the latter, that some of the farmers have been obliged to sell a portion of their stock at greatly reduced prices, not being able to winter them, that hay was considerably higher than it was in cities on the sea board. Could not this evil have been greatly mitigated, if not entirely prevented, through the exertions of man, with the aid of the natural enemy of insects, birds, and some other animals? If the evil could have been lessened one-half or one-quarter the public at large would have been great gainers! This will have to be done at some future day throughout our land, to organise in bodies and fight the enemy, and protect the birds and other animals, his natural enemies, by penal laws. A volume, or volumes, could be written on this subject, as there has been in Europe within a century or two, so great has been the devastations committed, and such the terror excited by this apparently insignificant animal at different periods of the world. To show the character and habits of insects more strikingly we will quote a few sentences from M. V. Kollar, a European entomologist of reputation, says: "The food of insects is indeed procured from an extensive pasture. From the majestic oak to the invisible fungus or insignificant wall moss, the whole race of plants is a stupendous meal to which the insects set down as guests. The larger plant consuming animals, limit their attacks to leaves, seeds, and stalks; not so insects, to the various families of which every part of a plant yields suitable provender. Some which live under the earth attack roots, others choose the stem and branches, a third division live on the leaves, a fourth prefers the flower, while a fifth selects the fruit or seed. Of those which prefer the foliage, some take nothing but juice out of the sap vessels, as the aphides, or plant lice; others only the upper or under surface of the leaves, like the leaf-rollers;" with numerous other branches of the great family. This is only a small sample.

In Europe the farmers sometimes complain that their lands will not bear clover, they get *tired* of it, or what they call *clover sick*: high manuring they say will not cure this sickness. This happens occasionally in Great Britain and on the continent. Whether it has ever occurred in America we do not know, very likely it has rarely, though as yet, as we advance in years as a nation, probably we will be afflicted in a similar way. We have a great variety and abundance of ground at our command, and shall have for many years to come. One of our remedies for this, and other important diseases similar to it, of the products of our farms, is change, sell out, and buy another, this is no effort for us, we are accustomed to such changes. In Europe, to talk to a man about changing for a similar cause his cattle, sheds, or pig pens, much more his homestead or mansion where he had lived and his ancestors before him, perhaps for centuries, and he would be sick, as well as his land of clover. Professor Johnston in speaking of this disease, thinks it owing in a great measure to the neglect of the use of farm yard manure or using too little of it. The Turnip is a very general crop in Europe, and especially Great Britain. Bone earth is the manure almost exclusively used for these, they do better with this than any thing else, will yield more from it as a food. We have never heard that they were *tired* of it, but appear to grow under it as well as ever. In their rotation system, wheat or some of the other grains and the grasses generally follow turnips. Grains and grasses require some bone earth, but they want something else. Farm-yard manure contains more or less of all the essential ingredients which most plants require as food. The Professor says, "if farm-yard manure in sufficient abundance and of good quality be applied along with the root crop the land obtains a certain more or less abundant return of *all these substances which the last rotation of crops had carried off from it* and which the new rotation will require for food. When the clover comes round, therefore, a supply of proper food is ready for it as well as for the wheat which is to follow. Neither bones or rape dust nor any such single animal or vegetable substance can replace farm-yard manure for an indefinite period, because it does not contain all the substances which the entire rotation of crops requires." We will cite one more high authority to show the importance in which farm-yard manure is held in Great Britain. Professor Anderson, Chemist of the Highland and Agricultural Society of Scotland, in a late lecture delivered there after naming the great advantages of farm-yard manure, concludes: "I beg it to be understood as my decided opinion that farm-yard manure must always be the farmer's main stay." All the most intelligent and best practicable farmers of Great Britain of the present day accord with this opinion. We are afraid we shall make some of our readers *clover sick* or *tired* of the grasses generally as well as the other topics here discussed if we continue the discussion farther at present.

EXTRAORDINARY COW.

GENL. CHANDLER.

SIR—I here give you an account of the fat cow Grace, which was viewed in March last, by a committee of the American Institute, consisting of Gen. Tallmadge, Mr. Meigs, yourself and others.

This fine cow was bred by Mr. Lewis F. Allen, and sold when a heifer to Mr. Sheafe, of Duchess county, and of him I purchased her. Mr. Sheafe showed her when *only three* years old, in the class of aged cows at the show of the New-York State Agticultural Society at Poughkeepsie in 1844, and she won the third prize.

In 1847, I exhibited Grace at the show of the New-York Agricultural Society at Saratoga, and she won the first prize as the best milch cow.

In 1850, supposing she had ceased to breed, she was fed by Col. J. M. Sherwood of Auburn, and was by him and me jointly shown at the show of the New-York State Agricultural Society at Albany, in September of that year, and won the first prize as the best fat cow shown.

In March 1851, she was brought to New-York city, and slaughtered. On being killed it was found that she was with calf, and six month gone.

The live weight of this extraordinary cow was, with her calf in her, 1795 pounds. The calf and its appendages weighed 60 pounds, leaving her live weight 1745 pounds. Her four quarters weighed 1210 pounds; her fat 153 pounds; and her hide 101 pounds; total 1464 pounds dead weight. Her dead weight was 83 lbs., and 89 hundredths for every 100 lbs.; her shrinkage being thus only a very small fraction (eleven hundredths,) more than 16 pounds in the hundred of live weight, or 16 per cent. I do not recollect that any animal ever dressed a greater dead weight for the live weight.

On being cut up, the beef of this fine cow showed superbly. It was beautifully marbled, and the whole carcass was remarkable for its great amount of lean meat.

Grace was a pure Short Horn, was calved in 1841, and was got by Victor (9,780,) dam Daisy by Bertram II, (3,114,) grandam Delight, by Devonshire (966,) great grandam Daisy, by Admiral (1,608,) gr. gr. g. dam, Yellow Rose, by Young Denton (1,963,) gr. gr. gr. g. d., Arabella, by North Star (460,) gr. gr. gr. gr g. d., Aurora, by Comet (155,) gr. gr. gr. gr. gr. g. d., by Henry (301,) gr. gr. gr. gr. gr. gr. g. d., by Danby (190,) (See American Herd Book, page 182, and English Herd Book, vol. 8, page 370.)

Grace left no progeny behind her, except one bull, now three years old. All her calves were bulls, and she produced five, and was in calf with her sixth.

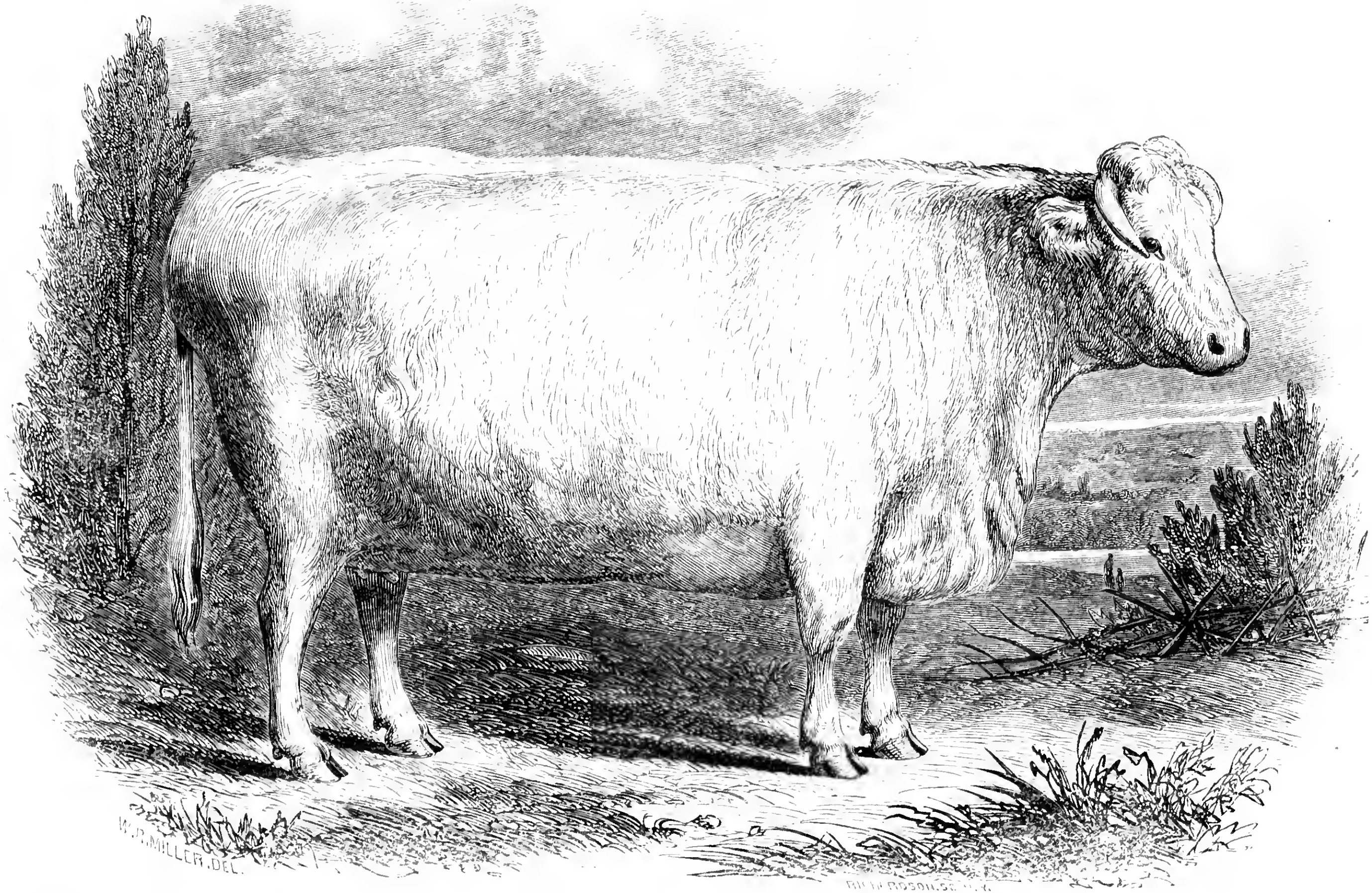
AMBROSE STEVENS.
New-York City.

FRANCIS' METALLIC LIFE-BOAT.

New-York, Feby., 8th, 1851.

Genl. Chandler,

Dear Sir—It affords me great pleasure to believe that the American Institute has been instrumental in some degree, in bringing before the public some five years since, the name of a man, who has in that short period, by his own unaided inventive genius, done more to preserve and secure life from shipwreck, than any man now living. I allude to *Joseph Francis*, inventor of the "Metallic Life-Boat." He has struggled without aid in a pecuniary point of view; and against the prejudices, opposition, and conflicting interests of ship owners, boat builders and the people at large. Now the whole coast of Long Island



SHORT HORN COW, GRACE, winner of the 1st prize, as the best Fat Cow, at the Show of the New-York State Agricultural Society, at Albany, 1850; property of A. Stevens and J. M. Sherwood. She was killed in New-York in March, 1851. Live weight, 1745 pounds; quarters, 1210 pounds; tallow, 153 pounds; hide, 101 pounds; total dead weight, 1464 pounds.

and New-Jersey are lined with his life preserving cars, and boats, under appropriations by Congress. The coast of Florida and Texas are to be. I have recently read the following letters respecting Francis' Metallic Surf-Boat, which have given me great pleasure.

Cape May Court House.

Lieut. John McGowan:

Dear Friend—I am just off the beach, Ludlam's, immediately opposite the boat house, where there is a large steamer ashore, the Eudora, from New-York, bound to California. Knowing your desire to know how the Metallic Surf-boats work, it affords me great satisfaction to acquaint you. I landed all the passengers this day and their baggage through a heavy north-east surf without difficulty. My men remarked, "It was only fun to play in the breakers with her." She is the finest thing I have ever seen for the purpose for which she is intended, and does the inventor great credit. I have acquainted Mr. W. R. Jones, of New-York, with her performance.

(Signed) R. C. HOLMES.
Collector of the Customs.

Squam Beach, Monmouth Co.,
New-Jersey, March 13, 1850.

Walter R. Jones, Esq.,
President of the Board of Underwriters of New-York.

Sir—I was present, and superintended, and sent the line on board the ship "Ayrshire," on the 12th of January, 1850, and by means of the Metallic Life Car, we landed in safety her passengers, in all, two hundred and one, which, in my opinion, at that time, could not have been otherwise saved, as the sea was so bad that no open boat could have lived. We attached the line to the shot and fired it from the mortar. It fell directly across the wreck, and was caught by the crew on board, and the hawser hauled off, to which we attached the Metallic Life Car, and pulled her to and from the wreck through a terrific foaming surf. Every soul, men, women, children, and infants, came through the surf during that cold snow storm, dry and comfortable. During the whole time of landing these persons, one of the india rubber floats put around the cars outside, by order of the government officer who superintended, was full of water, and the other full of air, showing the ability of the Metallic Boat to do her work, even under such disadvantages as having air on one side, and the weight of the water in the india rubber float on the other, in a heavy surf. The ship came on shore abreast of the station house, and they are ten miles apart; now, if she had struck between the two houses, or even four miles from shelter, many of those we saved from drowning, would have perished with the cold; but, as it was, all were landed dry and comfortable, and no one suffered, as we immediately put them in the house, and found the benefit of the fuel there provided by government; and this, in my opinion, shows the necessity of having the stations nearer together.

I have had much experience in wrecking, and was present at the wreck of the ship "John Minturn," and now say decidedly, (and many others who were present at both wrecks join with me) that if we could have had the mortar and Metallic Life car, we could have saved a great proportion, if not all of the souls from the John Minturn, which was wrecked on this beach.

The car is also very valuable for landing specie, jewels, silks, and packages, of all kinds, that could not be saved by an open boat. We can also communicate with the ship, by means of the mortar and car, as soon as she strikes, without waiting as heretofore for the storm to cease, by which time she may go to pieces, and all be lost.

With the above arrangements well attended, there need be few lives lost and much less property.

(Signed.) JOHN MAXON.

The very surf boat above mentioned, by means of which, two hundred and one passengers were landed in safety, and perfectly dry, was on exhibition at the Fair of the American Institute, where it justly elicited universal interest.

The Judges on Naval Architecture made the following report at the 20th Annual Fair of the American Institute:

The Galvanized Iron Life Boats have superior advantages over all others for the following reasons:

1st. Their endurance under severe trial, it being almost impossible to meet with sufficient injury to disable them from sustaining their compliment of persons for any length of time, in case of storm, wreck, or fire.

2d. Their extreme lightness, united with strength.

3d. Their inability to become nail sick, worm eaten, or leaky from exposure to the sun, however long they may be out of water.

4th. These Life boats may be used at sea to preserve life when nothing else can live, or for the daily use of the ship, being always in readiness for either service.

I have myself used one of these boats at my farm for the last three years, and put unqualified confidence in her; she cannot burn, break, rust, corrode, sink, shrink or rot. They are invaluable, and superior in every respect to every other kind of boat now in use, and I confidently recommend them to all my agricultural friends living in the vicinity of water.

I am, sir, very respectfully,

Your obedient servant,

R. L. PELL.

MANUFACTURES OF SOUTH CAROLINA.

We were very much gratified by the exhibition, at our late fair, of a buggy wagon, of superior workmanship, from the manufactory of Mr. J. C. Thornton, Columbia, South Carolina, every part of the work of which was made there, and the wood, consisting of black walnut, ash, white oak, and elm, was the product of the forests of that state. Mr. T. employs sixteen hands, having constantly as much as they can do. His work claims there a preference over work from the north, and his total sales per annum are from 60 to 70,000 dollars, which includes articles in his line purchased elsewhere. At Columbia there are now extensive tanneries, steam mills for sashes and panel doors, planing mills, saddle and harness manufactories, boot and shoe manufactories, and in the vicinity there are in process of construction two cotton mills. Manufacturing is rapidly on the increase, and the planters generally are favorably disposed.

An association has been organised at Charleston, denominated the South Carolina Institute, for the promotion of agriculture, manufactures, and the mechanic arts, under the auspices of which a fair was held at Charleston during the last autumn, when a large number of premiums were awarded for articles of merit, among which we notice the following: for book-binding, printing paper, tallow candles, soap, thrashing machine, work for engines, and patterns for mill gearing, cotton gin, coaches, to a lady for a blanket and carpet made of cow's hair, to a lady for cassimere, to a manufactory for black cassimere, to a young lady for domestic silk, to a lady for silk gloves, for cotton yarn, striped homespun, shirtings, sheetings, drills, osnaburghs, axes, wine and brandy, wrought and cut nails, muscadine wine, cream ale, wool hats, shoe lasts, pine burr bonnets, Sea Island cotton, calf skins, upland cotton, Florida tobacco, brown sugar, pottery, and flour, with a great variety of other manufactures. The exhibition consisted of the products of North and South Carolina, Georgia, and Florida.

This is certainly a good beginning, and with our whole heart we wish them success. It will afford us the greatest pleasure imaginable to find at our annual fairs here in New-York specimens of the handicraft of our countrymen of the south in competition and rivalry with the manufactures and mechanical skill of the north. They may always rely, that at the hands of the American Institute, they will meet a most cordial welcome.

A. C.

IMPORTED SOUTH DOWN SHEEP.

A. CHANDLER, Esq.,

Sir—Having shown ten ewes at the Cattle show of the American Institute, in October, 1850, I deem it proper to give you an account of them.

These ten ewes were imported from England in September, 1850, together with a buck and one other ewe. The buck died soon after landing from the ship, and one of the ewes also died from a broken leg arising from an accident at sea in a gale.

These sheep were bred by the most distinguished breeder of South Down sheep in England, Mr. Jonas Webb, of Babraham, Cambridge, England. Mr. Webb commenced showing *bucks* alone of his breeding in 1840, at the shows of the great English Agricultural Society, and he has steadily every year won all the first and second prizes till 1850, when for the *first time* he was beaten, and then only by bucks got by his own rams and their dams by his own rams. Mr. Webb now only shows shearling bucks, and his long list of winnings shows his superior breed. He has annual lettings by auction of his bucks, and generally lets about 150 each year, at prices varying from 20 guineas to 60, 80 and 100 for the use of a buck for one season. The buck which I brought out was the second highest in price at his letting in 1850 for *shearling* rams.

At the Fair of the American Institute, I showed all the sheep of this importation, ten in number, that were alive at the time of the Institute's show in October, 1850, and they won all the premiums for ewes of their class.

In January, 1851, I imported from Mr. Webb twenty more South Down ewes, ten being lambs of 1850. The ten ewes were shearlings, and all ten have dropped lambs, got in England by Mr. Webb's celebrated buck Favorite.

It will thus be seen that I imported thirty-two South Down sheep, thirty of which survive, and of these eleven have dropped lambs got in England. Col. Sherwood, of Auburn, now owns ten of these ewes.

These sheep coming from the very best source in England, (for Mr. Webb has no equal as a breeder of South Downs in England,) must contribute to the improvement of South Downs in this country.

AMBROSE STEVENS.

SEED POTATOES FROM CALLAO.

The American Institute gratefully acknowledge their indebtedness to Capt. Phineas Windsor, of the ship Angelique, which arrived at Baltimore in November last, from Callao, for his kindness and attention, which will be best explained by the following letter.

Baltimore, November, 25, 1850.

To the American Institute of the city of New-York:

Please accept of the accompanying samples of potatoes. There are four kinds,—three of them are the choicest of all Peru, together with specimens of the original wild potato of Peru. The latter require to be planted three successive years before they will come to maturity. Supposing they would be acceptable to the Institute, I take the liberty of sending them.

Respectfully,

PHINEAS WINDSOR,

Ship Angelique, from Callao.

The above specimens were duly received as per date. But the letter was not received until within a few days. We are happy to say that the potatoes were carefully preserved until the explanation reached us, since which they have been placed under the care of Mr. Wm. Kent, gardner and florist, Prospect Hill, Long Island, and we anxiously expect the next season, to be able to distribute seed among the attendants at our Farmers club.

A. CHANDLER,

Cor. Sec'y.

TEA.

From the Revue Horticole, Paris, 1850. Translations by H. MEIGS, Esq.

In the districts of the province of Fo-Kien, where they cultivate the Bohea, the temperature resembles that of Kiang-Nan, snow and ice prevailing for some six or eight weeks. The tea bushes tied in bundles to enable them to sustain the weight of the snow. The small river Kien Kio Kée which winds through the vallies of Fo-Kien freezes every year. We met on the roads gangs of vagabonds who demanded alms of us and they tried to excite our charity by scattering straw and other like material over the icy surface of the road to prevent our pedestrians and our beasts of burthen from slipping.

Father Carpina, who resided a long time in the eastern part of Fo-Kien, assured Mr. Ball that the teas had never been damaged nor the crops retarded by winters as severe even as that of 1815, when snow fell to the depth of nearly *three feet* in the canton of Fo-Gan, in latitude 27° and to the depth of over *four feet* in that of Ning-ti. In that year and in 1816, the river Mo-Yang was frozen so that boatmen had to break the ice in order to get their boats along. This river is about the size of the Guadalquiver at Cordova.

The Camellia, which is a congener of tea, grows in all parts of China yet visited by our travellers. At Shanghaï in latitude 31° 24′ the climate may be considered as analogous to that of Japan, which is the native land of Camellia—and Thunberg assures us that the cold is intense there, the thermometer indicating many degrees below the freezing point (the French writers zero) even in the warmest provinces. In the winter of 1845-1846 the river Woosang (in Shanghaï) was frozen so hard that the Englishmen skated upon it. The Camellia in open air near London was not injured by the cold winter of 1837-1838, altho' the cold was at times below the zero of Fahrenheit. In that winter some Camellias in the garden of the London Horticultural Society, in open air near brick walls, which gave some lateral protection, were not in the least injured by a cold of 4½ degrees below Fahrenheit's zero. Those plants exhibited after this weather, the most brilliant health and flowered most abundantly.

White Transparent Carrot.—From Mulhausse—Smaller than other carrots, but very white and transparent.

White Flat Beet from Vienna.—This is much like the flat turnip.

Yellow Globe Beet.—Grows almost out of the earth—flesh very white, compact, and probably more nutritious than the scarcity beet. The red globe beet is inferior to it in all respects.

Cannabis Tsing-Ma, or Chinese Hemp.—Grows to the height of from eighteen to twenty-four feet—fibre finer than the common hemp, requires a longer summer.

HUNGARIAN CATTLE.

In 1850, Roswell L. Colt, Esq., of Paterson, New-Jersey, imported to the United States, a bull and heifer from Hungary, of the Murzthal breed. The importation was made in consequence of a high commendation of this race of cattle contained in the Patent Office report for the year 1847.

Mr. C. L. Fleischman was in 1847, sent out by the Commissioner of the Patent Office to Germany, on a tour of observation. In his report he speaks thus of the Murzthal cattle.

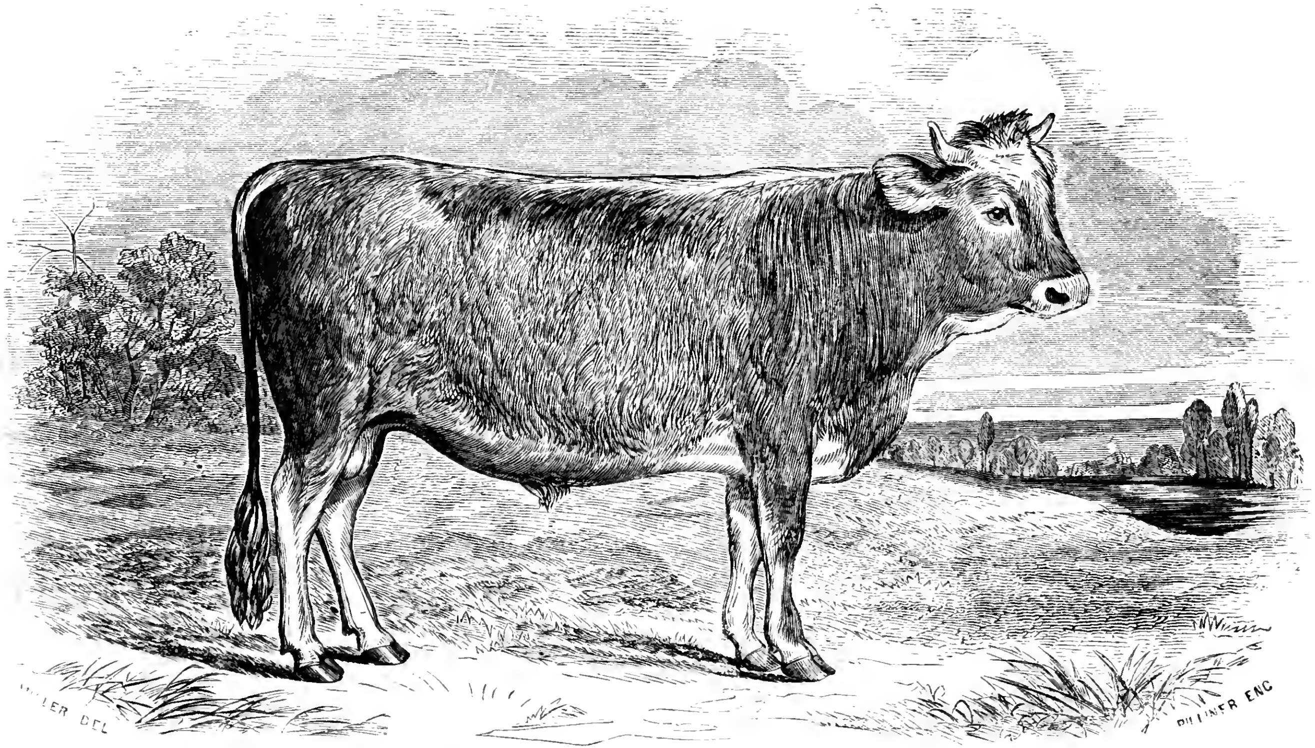
" Agreeable as the general impression must be which the Swiss cattle at the Marienthal Dairy make upon the stranger, it is *nothing when compared to the sight*, reserved here for the farmer of the fine stock of Murzthal cows. *This race combines nearly* every one, if not every excellence ; abundance of milk, disposition for fattening, and great strength for draft ; and is raised here in its highest perfection. The full blood of this race is characterised by the small-shaped head, with broad forehead, and broad mouth, short and fine horns, extended body, broad back and handsome neck, high and slender, tail of considerable length, fine bluish hair, big udder, and on the whole, by the stately and soft entire appearance."

Induced by this representation, Mr. Colt through the agency of Gen. James Watson Webb, chargé of our government to Austria, procured a bull and heifer of this breed, and they arrived here last summer.

In September 1850, these animals were shown at the fair of the New-York State Agricultural Society, and Mr. Colt received a diploma, and the thanks of the society for their exhibition.

In October 1850, Mr. Colt exhibited these Hungarians at the show of the American Institute, when were awarded to them the premiums named in the list of the Institute.

Portraits are given of both of the Murzthal cattle.



IMPORTED HUNGARIAN BULL, one year old; property of ROSWELL L. COLT, Patterson, N. J.

THE PEACH OF EGYPT—BY MR. FOREST.

Translated from the Annales D' Horticulture, Paris, July, 1850, by H. Meigs, Esq.

In a garden attached to the Chateau of Mandilly, in the department of Yonne, belonging to Mon. le Compte de Bressieux, a great friend of horticulture; there is a peach almost utterly unknown in France. I will say a few words about it.

It has one quality which has hitherto been unknown in peach trees, that of great capacity to bear hardships, and to resist all the maladies common to our peach trees. This one can be easily raised any where, almost, in open air, for it wants no shelter at all. The specimen in question, has a kind of pyramidal form, and is about fourteen years old. Mr. Bressieux, has raised a number of them from the *pits*, and their fruit is identical with that of the mother tree· They are covered with fruit, and with deep green foliage. They present a perfectly robust appearance, while our ordinary peach trees in the same garden are stripped of both fruit and leaves—a sickly appearance too frequent in our peach trees One of these Egyptians, at three years of age, ripened eighty peaches. The original came from Egypt with our armies in 1802. It was brought over by a military surgeon belonging to Dauphiny. The pit separates from the flesh readily. The size about the same with that of the *Teton-de Venus*, (breast of Venus,) and it ripens at about the same time.

ACTION OF SULPHATE OF IRON (GREEN VITRIOL) ON VEGETATION.

Translated by H. Meigs.

Mr. Eusebius Gris has made a fine discovery of the property of this article in rendering plants healthy and of strong growth. Numerous experiments give results as follows:

On 4th of May, 1849, while a shower was about to fall, he threw broadcast over a piece of wheat a small quantity of powdered sulphate of iron; the rain fell two hours afterwards and soaked it into the ground. When harvested this piece of wheat yielded $6\frac{1}{2}$, while a piece of the same size and condition along side of it gave $4\frac{1}{2}$ of weight of the whole plants. After being threshed out and fanned, the sulphatized wheat weighed $2\frac{1}{4}$ and the other $1\frac{1}{4}$. Beans treated in the same way compared thus: those sulphatized weighed $2\frac{1}{4}$, the other $1\frac{1}{4}$. Potatoes thus treated gave 9 for the sulphatized and 6 for those not, and all the sulphatized plants and fruits are more beautiful. This result appears in potatoes, wheat, beans, onions, carrots, cauliflowers, asparagus, peaches, pears, vines, &c.

CALCEOLARIA—SLIPPER FLOWERS.

A genus of Scrophulariaceæ.

Translated by H. MEIGS, Esq.

These plants are found in abundance in all parts of the world, from the coldest regions in which flowering plants can vegetate to the hottest place within the tropics. *Lindley's Vegetable Kingdom.*

Revue Horticole, Paris, 1850.

We borrow from Van Houtte his culture of these charming plants, which after having remained almost a monopoly of Belgian Horticulture, has at last become definitely established in France. The Messrs. Boudoux, of Paris, and Mr. Belot-Defougères, at Moulins, have furnished us with many beautiful varieties. If the cultivation of the calceolaria calls for all the attention of the gardener, yet by way of recompense it indemnifies him amply by its vigorous and brilliant flowering and long duration, and is worthy of all care. Sow annually, in August, in a well drained bed of earth, in the shade, under glass, or in a cold glass conservatory without covering the seeds. Put each young plant in a pot, and keep through the next winter on a little table in the cold conservatory, where it must be well aired and exposed to the rays of the sun; early in spring change it into other pots twice at least before flowering, in order that the young plants may acquire a great vigor and produce abundant flowers. Humidity is bad for them. Whenever the weather permits they must be well aired. The soil must be but slightly humid during the winter; but in spring, after the first re-potting, water abundantly, but not so as to hurt them. They flower commonly in May and June, and they must then be in open air, in the shade of cloth stretched over light frames or shade of quick hedge. Wet them by means of a syringe, causing a shower, abundantly, and they will now soon repay all your trouble by giving an admirable and luxuriant flowering. When this falls away expose them to the full rays of the sun in open air, but sheltered from high winds. Watch the maturity of their capsules and hasten to gather the seeds, else they will be lost by scattering on the ground, where you can hardly see one, so very small are they. If you keep the old plants till next year they will not reward you, for they become deformed and give meagre flowers. For varieties you can with great care hybridize them—the organs are very delicate. Van Houtte has brought them to the perfection which we now behold, by his ingenious and persevering care. Grow abundantly in Chili, Peru, New Grenada, &c., among rocks, rich plains, woods, &c.

IMPORTED DEVON CATTLE.

In October, 1850, I exhibited at the show of the American Institute, seven Devons, and with them won all the prizes for which they were shown. All that I imported were shown, save one bull which I sold to Mr. Lemuel Hurlbut, of Winchester, Conn. These seven consisted of one heifer three years old ; three heifers two years old; one heifer, a yearling ; and two bull calves. The three year old won the first prize for aged Devon cows ; the yearling heifer the first prize for yearling Devon heifers ; and the two bull calves the first and second prize for Devon bull calves. As there was no prize offered for the two years old heifers, the two year olds could not win ; yet the committee awarding the premiums, deemed them worthy of a special extra premium, and awarded one.

These Devons were derived from the first breeders in Devonshire. Mr. James Quartley, of Molland, Mr. Merson, of Brinsworthy, and Mr. Davy, of Flitton Barton, Devonshire, England. Mr. Quartley is the most distinguised breeder in England, and has won more prizes than any other. The last show of the great English Agricultural Society, was held in 1850, at Exeter, in Devonshire. The display of Devons was the best ever seen, and Mr. Quartley, won every premium save one. One of the bull calves which I imported, was got by Mr. Quartley's first prize bull that won at the Norwich show, 1849, of the English Agricultural Society, and was out of his first prize cow, at Exeter, 1850; and the yearling brother of this bull calf, won the first prize for yearling bulls at Exeter, and his two year old sister, won the first prize for two year old heifers at the Exeter show of the great English Agricultural Society.

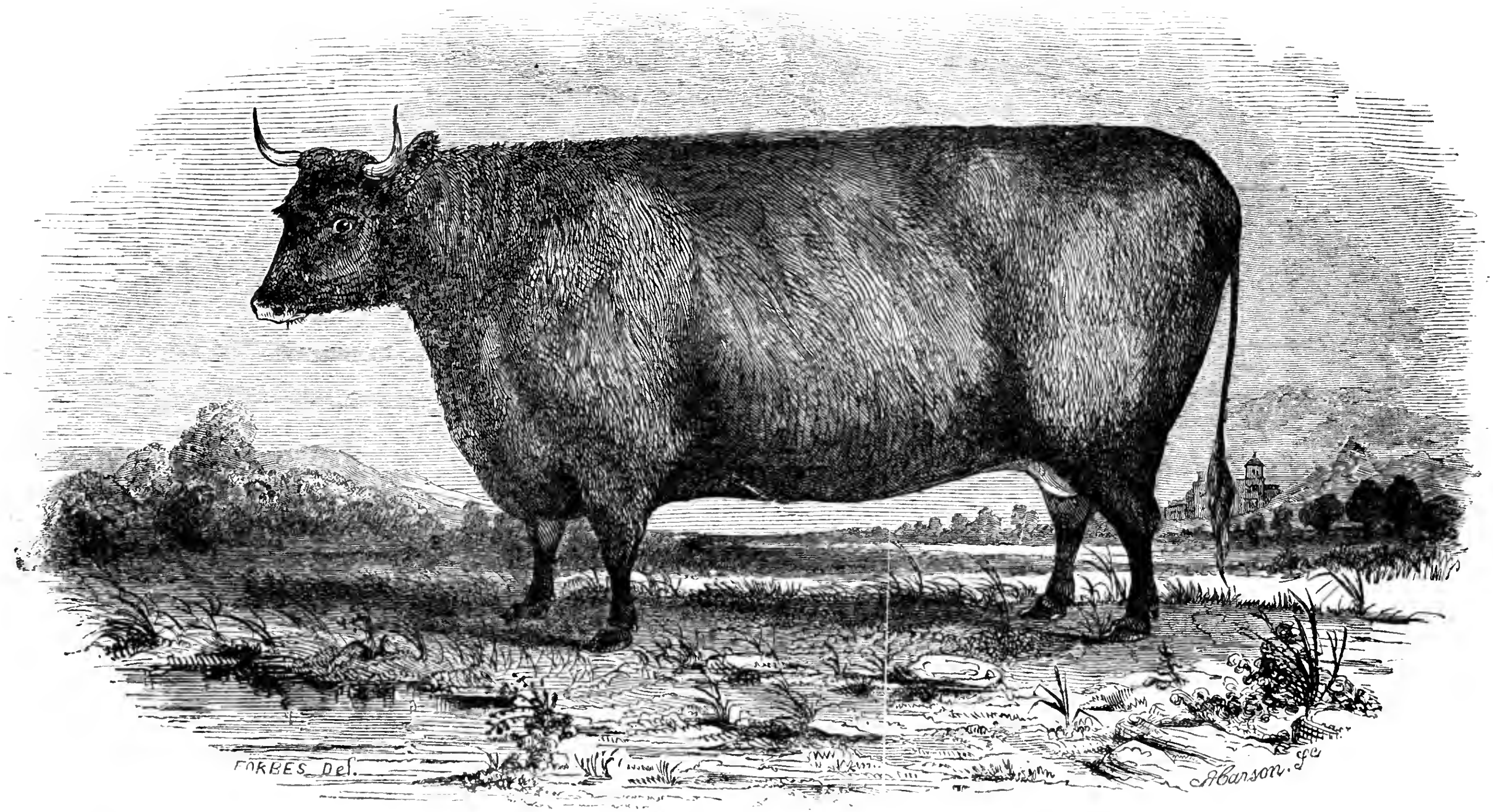
Four of these heifers have dropped calves this spring, of which two are bulls.

The accompanying cut of a distinguished Devon cow now in my herd, will well show what a fat Devon cow can be. This Devon was got by Mr. Dibble's imported Devon bull, bred in England by Mr. Davy, of Flitton Barton, and imported 1850; her dam was bred by the Hon. Rufus King, and got by his imported Devon bull, and out of one of his imported Devon cows. The Earl of Leicester, sent these Devons out to Mr. King, in 1819.

The cow represented in the picture, was shown by me at the show of the New-York State Agricultural Society, in 1849, at Syracuse, and won the first prize for Devon cows. The portrait was taken when she had been dry eight months, and when she was very fat. She is remarkable in her breeding, producing heifer calves always, of which she has now had six.

The Devons I have imported, derived as they are, from the best and purest sources, must be of service in the breeding of Devons in America.

AMBROSE STEVENS.



A. STEVENS' PRIZE DEVON COW; winner of the 1st Prize for Devon Cows, at the Show of the New-York State Agricultural Society at Syracuse, in 1849.

ARTIFICIAL FRUIT.

Mr. Townend Glover, of Fishkill Landing, exhibited at the Farmers' Club of the American Institute on the 18th inst., specimens of artificial fruit, amounting to 204 varieties in duplicate, consisting of apples, pears, plums, cherries, strawberries, nectarines, apricots, quinces, grapes, pomegranates, figs, gooseberries, currants, Osage orange, various nuts, and models of leaves of various fruit trees, showing the depredations of insects very minutely.

The above were modeled by Mr. Glover in a composition prepared by himself, and painted in oil colors, representing in a most beautiful and perfect manner the natural fruit. These specimens have been transported over 600 miles, and frequently unpacked and repacked without showing the least deterioration, which demonstrates the superiority of this method of representing fruit over wax, which is generally used.

Mr. Glover has engaged to prepare specimens of fruit for several Horticultural and Pomological Societies, so that accurate specimens of the varieties of fruit may at any time be examined, and we congratulate them on the acquisition of such a collection. It will aid those who design to purchase trees, in their selection, and if properly used, may add a guarantee, which in many instances has been sadly wanted. I have ever considered it one of the grossest acts of wickedness for a person to sell young trees and other fruit plants as genuine, knowing they were not so, thus causing many to consume years of their lives in bringing to maturity plants utterly worthless.

We are happy to state that the Institute, on the recommendation of the Farmers' Club, unanimously awarded a gold medal to Mr. Glover.

A. CHANDLER.

DESTRUCTION OF INSECTS.

The ravages of insects is one of the most formidable annoyances with which the cultivator, in every department of agriculture, and particularly horticulture, has constantly to contend. It is undoubtedly true that the subject has been much neglected; it seems to be important now, when it is admitted that some of the most destructive species are greatly on the increase, that every available method, calculated to arrest their multiplication, should be put in requisition. And unless there is a very general concert of action among cultivators, it cannot be expected that much good will be accomplished.

The terror, at one time created by the ravages of the Hessian fly, if it has not abated, we are glad to believe has not increased, and we do not despair of the discovery of an effectual remedy yet. Many other species are increasing with great rapidity, and their ravages are very great. It will be well to consider in what state of the existence of insects they may be most readily and effectually destroyed. A large number of insects deposit their eggs beneath the surface of the ground, but it is believed that by far the greater portion are left above ground. In the egg or in the larva state we have heard of no application which has proved very efficacious. These must generally be left, therefore, to the care of birds, which should always be protected, caressed, and encouraged by every means to congregate unmolested throughout the land. The eggs of insects with their larva, constitute a large portion of the food of birds. With few exceptions, those insects, which, when they reach their perfect state are furnished with wings, fly from one to twenty days, after which they deposit their eggs and die. During their winged state, therefore, would seem to be the proper time to attempt their destruction.

We are not prepared to recommend anything, for which we would claim a preference, as being the *best method*, but simply design to awaken attention to this important matter, and state such methods as have been suggested, with a hope that those more experienced will follow, until something, promising good results, may obtain general attention.

It has been intimated that there may annually be multitudes of insects destroyed by the following method, which is novel, and entitled to consideration. A barrel is to be perforated with holes two inches in diameter and six or seven inches apart; then coat the barrel with very thick molasses, and place the same on a post in the garden one foot from the ground; in the barrel ten or more inches from the bottom, place a lamp with a large flame. During the night insects will be attracted by the light and thus destroyed.

Insects may also be destroyed in great numbers by kindling up fires in various places after dark. Perhaps it would be well to prepare a box or basket of stout iron wire or hoops of sufficient size, and fill it with wood projecting through the interstices, then placing it a few feet from the ground, set fire to it after dark when there is little or no wind. Should this plan be generally adopted, the destruction would undoubtedly be very great.

A. CHANDLER.

ADDRESS

Delivered at the Opening of the Twenty-Third Annual Fair.

By Hon. Henry Meigs.

Ladies and Gentlemen,—

On behalf of the American Institute, I have the pleasure o opening the twenty-third Annual Fair.

The old world always used to celebrate the season of fruits, especially the harvest and the vintage, with joyful sports. The fall of those good things, bread and grapes, filled every soul with gratitude to the Giver of all good Behold in this ample amphitheatre the ripened fruits not only of our rich gardens and fields, but of our never-ceasing industry in all the Manufactures and Arts.

The productions of our heads and hands justly cause a proud feeling in our breast. From our first rude work to our most perfect, we rejoice in progress—how great the results of this most exalted feeling! Man is said to be not only without impiety, but with the highest attribute, the maker of things left unmade by his Creator. He that cannot make an ocean steamer that will cut her way through the rough Atlantic, three hundred miles a day—nevertheless has a full share of honorable pride in the fact that his fellow-citizens have done it, and the more useful and the more grand the achievements of his brothers are, so much more proud does he become of his country. He feels it a title of honor, of high distinction to say,—I too am an American. And it is also natural for our old relative, England, to witness the unparalleled increase of Jonathan, and to hear her speech already that of the most people of the two Americas, to see thousand of presses pouring out daily, millions of papers in that noble tongue.

England claims the high honor of being the first in the West of Europe, to set all her children at work; so that while a portion of her sturdy people make the bread, the remainder, large and small, male and female, are at work in the wonderful arts of genius and mechanics. And although not fond of a rival, she is pleased to behold *Jonathan* doing likewise. She now invites him to be in London in May and June next, with every one of his contrivances and the natural productions of his country.

On this spot the other evening, the delightful song of the benevolent Swede, filled thousand of hearts with joy, and from this spot she poured back into the hands of the people, ten thousand of their dollars for most Christian uses. One would think that this temple of the honest industry of our people, was, by that precious act of Jenny Lind, so consecrated that for ever after, sin and misery may not enter its gates.

The American Institute, true to its title, has ever maintained one course. It has no sectional or any narrow views. It has on all fit occasions encouraged Agriculture, Commerce, Manufactures and the Arts *in all parts of our country.* It has rejoiced to know of late years, that the loom is brought near the cotton field—that all the mechanic arts begin to cluster around that loom. And throughout our country the fine arts, Painting, Sculpture, Architecture, &c., are all actively employed,—Farmers' Clubs, Institutes, Arts Union, Mechanic Associations, Premiums at Agricultural and Mechanic Fairs becoming greater and greater. An Agricultural show at Albany, where the things shown were excellent, *and the people a hundred thousand of them*—the most interesting part of it.

And, gentlemen, allow me to say that here in this well-bred throng, how would our glory eclipse if the ladies were absent. We never can make a Fair without them! In the rich engraved diplomas of modern times, we behold, for the first time since creation, the most humble arts elevated so as to be subjects of equal notice with the greatest. In some of the European engravings, as in the diploma of the Gewerb Verein, of Lower Austria,—the *worky union*, the industrial association,—the honest cobbler is as much noticed as the philosopher. That honor ever due to honest industry in the judgment of all good and wise men, in every age, is now beginning to be manifested openly.

For a long time past I have observed with great pleasure, the care which our citizens take in the making and ornamenting all the implements of industry, by polishing the iron, steel and brass, by using the richest woods—by even inlaying the implement with silver, gold, ivory, by *gilding the plane-iron* of honest Jack, who begins and does the roughest work of carpentry, and the gold coat it wears not merely renders it a proud act to handle it, but prevents it from becoming rusty. The shovel, spade, and the plough begin to glitter in the sun, and they all work twice as well for being polished, and the man that uses it is always proud of it.

This is peculiar to the men of this republic. And these men have enlarged minds like the continent they own. They have now stretched their power from the rude, stormy Atlantic, to the peaceful ocean of ten thousand miles breadth. The sea coast of their republic, following the curves of bays and inlets, amounts to more than twelve thousand miles, and the river banks on which the farms may some of them have a front, consist of some three hundred thousand miles.

And that peaceful ocean on which the Indian Proa is safe—what a field for Ocean Steamers! and as they pass by island after island, receiving the delicious productions of their fresh fruits and meats and water from their boats, always ready to run alongside. No fancy can out-vie the scenes yet to come, soon come on that vast gentle island ocean. Our part here is to prepare the way and keep *this side up!* For a maxim of old is also one of ours—*That if every man takes good care of himself, all will be well taken care of.* Now for this good care of both soul and body, above all nostrums for preservation from moral and physical disease, we were obliged to recommend Industry, Industry! Industry!! Three times three would not be too much to take of this panacea.

A superb common sense, is the property of nine out of ten of the men and women of our country. No matter what the question may be, or however fiercely debate may rage, the judgment of this great nation has never once failed in the end as to its true course and duty to the world and to itself. Hence the almost incredible march of it, almost as astonishing to ourselves, as it is to the old world.

In spite of all history, we have up to this hour, made but one uninterrupted march from the beginning. No civil war, no incurable wounds have been among us. Those causes of dissention which have in all former ages been productive of war and consequent desolation—a periodical return of war—so that the old nations stood still for ages, as to population, have not yet operated dangerously among us.

Here in a couple of centuries, from a small boat-full of men, see more than twenty millions of them. See from the thirteen colonies, in my time, an empire four thousand miles by two thousand, or upwards of five thousand millions of acres. Suppose that the population of the whole earth is one thousand millions, then our republic can give to the whole human race, five acres each, large and small, so that an ordinary family of father, mother and four children can have thirty acres for its own use.

All over our great domain we hear the ceaseless hum of human and machine labor. The latter has become in our time the object of wonder. We are almost as much astonished at modern inventions, as our Indians were at the ships and the artillery of Columbus. By the constant habit of observation, and with entire self-reliance, and with liberty which has no other boundaries than those which morality and religion impose, the freemen of our country will carry to the uttermost perfection all the arts that can be useful or agreeable to man. To this grand spectacle of American work of only a single year, we most heartily bid you all a welcome, hoping and believing that many wlll profit by the great means afforded to the public for selection of valuable works for improvement, and all of us by a view of the whole.

Take a fair view: you will find many a single article worth all your trouble. See the gigantic Dick's Anti-Friction Press cut iron half an inch thick, as you cut pasteboard with your scissors.

Among other evidences of increasing prosperity, we may call to our aid the recent supplies of peaches. In no land was there ever seen such a perfect deluge of any fruit whatever, since the days of Eden. Peaches of fine quality sold in the streets everywhere. Peaches sixpence a half peck! not half the common price of potatoes!

When we recollect that in all other countries the peach is confined to the dessert of the few, the rich, (I may say,) here have we peaches more than enough for every human being! Our peach men as they are coming in steamers with their spacious decks so full of peach baskets that one has hardly room to walk, pelt the poor Immigrants just sailing up our bay, with thousands of peaches!

One gentleman of our Institute, on his arrival from Europe some years ago, saw for the first time, an orchard of peaches. He stopped at the farm-house to which it belonged, and desired from the farmer's wife, a bowl of milk, some bread and butter, and peaches. He made a luxurious meal. Having finished, he called for his bill, supposing that he had made a costly meal. The good lady said her charge was sixpence! But, madame, how much for the peaches! Oh hi, said she, I ask nothing for them, and if you want any more, you may carry away as many as you please!

In these works of our heads and hands, we realize the glorious fact that God made man after his own image. It is the triumph of reason over all powers and all instincts—and it is going on to a future of a brightness inconceivable at this time—for every successive generation records by the agency of the arts of printing and engraving, what has been gained from the first, and adds new modifications and discoveries, new forces for further operations.

The Indians of our Atlantic coast, told us of the Big Bull, who anciently appeared, destroying their ancestors; that the great

Spirit appeared to save them, launching fiery darts into him; that at length the monster fled, bounding over the Ohio and the great lakes. So recently a monster of Discord threatened our peace and safety, but thanks to God! he has recently bounded over the Rocky mountains and into the great Pacific sea. He leaves our broad domain in peace, and the prospects of a future grandeur, too great for even the poet to conceive.

ANNIVERSARY ADDRESS.

Delivered before the American Institute, at the Broadway Tabernacle, October 11, 1850,

By Samuel Greene Arnold, Esq., Providence, Rhode Island.

Mr. President and Gentlemen of the Institute—

Most heartily do I wish that the remarks which I shall address to you this evening were more worthy of the occasion. In appearing before an audience which, as representing the great industrial classes of our country, yield to none in importance and intelligence, I am incurring a degree of responsibility which should devolve on an abler mind and riper years. Justice to you and to myself requires me to say how and why I come. Scarcely a week has passed since you received intelligence from the Capitol of the severe and sudden illness of the distinguished gentleman who should have been your orator.* When it became certain that all hope of securing his valuable services was vain, your committee applied to me to assume the task. I come then as a minute-man to fill the hour though not the place so inopportunely presented. No time has been allowed to collect and prepare statistics which might have been of use in presenting at a glance the result of many observations in all those branches of our national industry, which it is your province to watch over and protect. But if all is not accomplished which I would wish, at least I have done what I could, and premising thus much, throw myself upon your indulgence. This I feel the more emboldened to do when I consider the character of those whom I am addressing, for education and talent are ever courteous, seeking rather to approve that which is good than to condemn that which is faulty.

*Hon. S. S. Phelps, U. S. Senator from Vermont.

I see around me a body of men, among whom are very many who have attained eminence in some one or more of those departments which the Institute is designed to cherish—the "merchant princes" of your city, the patriarchal farmers of your state, the world-renowned mechanics of your forges and your dockyards, the successful manufacturers on your streams—all proud and worthy representatives of

"The nobility of labor, the long pedigree of toil."

They have brought hither the rich products of their industry and skill, fruits and flowers which might adorn an Eden, machinery which, like the artist's work, "lacks naught but soul to make it human," fabrics which rival any we import, and countless objects reared by nature or natured by art—all offered as a glowing tribute to your fostering care, an exhibition worthy of the commercial metropolis of America. To a stranger it might seem that Castle Garden were the World's Bazaar, and this the market-day of Christendom.

The subject which such an occasion must suggest to the mind of every patriotic American is comprehensive and soul-stirring, "but all we can expect to throw over it will be but lights and shadows intermingled, where others would cover it with a field of beauty and of glory."

AMERICAN INDUSTRY—*what it has achieved, and how it may be fostered.*—In discussing this subject I shall consider how largely instrumental were the industrial habits of our people in framing our political institutions; the moral influence of the United States upon the world, as traced in the history of nations, and as witnessed at the present day; and in conclusion shall touch upon the two points of principal importance to the development of American Industry—*Protection and Union.*

A brief sketch of the history of Fairs may furnish an introduction appropriate to the occasion. It is not my intention to revert to those institutions of antiquity which bore a resemblance to the modern fairs, nor yet to spread before you the laws by which these were regulated and the changes through which they passed. This subject has already been discussed upon an occasion similar to the present. I shall therefore simply refer to the origin of European Fairs, and hastily note their progress down to our own day.

Since the christian era, the earliest fairs in Europe of which commercial history informs us, were those of Italy. The successive invasions of the northern hordes had annihilated, under Odovcer, the last remnant of Roman power. In the long period of war and rapine which preceded the reign of Theodoric, commerce had been crushed; but upon his accession to the throne of Italy a new period dawned upon the world. The sceptre of this benignant conqueror was swayed for the good of his vanquished subjects. The arts of peace were encouraged, trade was favored, and the old avenues of commerce which for ages had been closed, were once more opened to the enterprise of Italy. The Jews, those unfailing barometers of public credit, hastened to a country where they might avail themselves of the opportunities presented by the new order of things, and at the close of the fifth century fairs were established by law for the interchange of foreign products with those of Italy. They were small, to be sure, for as yet the ravages of recent war had kept the country in a state but little removed from barbarism. But they were the feeble beginnings of a system destined rapidly to grow in strength, and ultimately to fix the relative importance of continental states in the scale of power. Three centuries later we find the Netherlands emphatically the land of fairs. Under the reign of Charlemagne they were established upon a basis calculated to ensure the lasting prosperity of that country, and to this day we use the standard established by them for weighing the precious metals. In the tenth century the manufacture of woolen cloths, then monopolised by the Flemings, furnished the materials for a lucrative trade with France in exchange for wine and oil. Free fairs were appointed by government at which goods sold were exempt from all duties. About this time fairs were established in Germany and the North, but the principal trade was in captives taken in war, who were sold for slaves. It was not till long after this period that we read of fairs in England. They appear to have been introduced from Flanders in the thirteenth century. They were limited as to time, but so popular did they become, that they were often held beyond the time allowed by their charters, and in the reign of Edward III, an act of parliament was passed forbidding this excess. After this we find them the frequent subjects of legislation in England, and so esteemed for the prosperity they conferred, as to be the occasion of bitter reclamations between the Londoners and the country people, the former having attempted a monopoly of the institution to the detriment of the inland trade and the enlargement of their own. In the reign of Henry VII. this difficulty was adjusted by act of parliament.

We have thus rapidly sketched the progress of fairs from their origin in Italy to a period when they had become generally adopted in Europe, and did our limits permit, we might show by a comparison of the several countries that political power was already allied with commercial prosperity, and that those cities which possessed the elements of strength in the greatest degree were those most celebrated for the frequency and the extent of their fairs. Antwerp is a signal illustration of this truth. In the beginning of the sixteenth century she was perhaps the greatest commercial city of the continent, and made so, confessedly by this cause alone.

But how different were the objects which originated and sustained the fairs of Europe from those which animate the kindred institutions of America. In fact the only points of similarity would seem to be the outward appearance and the name. A vast collection of merchantable articles, which nature and art combine to furnish, are collected in one spot. The aggregate is termed "a fair," and here ends the resemblance. The motive of the one was gain by sale or barter; the objects of the other are to stimulate home industry, to diffuse information, to award the meed of praise and patronage to native genius,—in fine, to urge onward by the power of associated mind the elements of our national progress. Associations like this are well worthy of our age and country. They form no inconsiderable portion of that moral influence which the Union is now exerting upon the world.

Among the earliest incorporations for this object is the American Institute. How genial and how mighty have been its results, let the records of each State, and of almost every country fair throughout our land bear witness. But the end is not yet. The wave of influence gathering from the West has rolled across the Atlantic, and borne to the shores of Britain a new idea. It has been seized upon with that avidity which marks the Anglo-Saxon mind when any great and noble purpose is offered for its action, and it is being carried out on a scale of grandeur commensurate with the enlightened views and the collossal wealth of the British nation. And you, Gentlemen of the Institute, some of you at least, when you visit the "World's Industrial Fair," in the coming June, may feel a patriotic pride in cherishing the thought, "This is an American Idea." It will be a "World's Convention" worthy of the name.

The second section of your Charter recites that the American Institute is "incorporated for the purpose of encouraging and promoting domestic industry in this State and the United States, in Agriculture, Commerce, Manufactures, and the Arts."

American industry! How vast the theme, how inexhaustible appears the subject, which is at once the cause and the consequence of our national greatness. The cause—for who can deny that it is by the restless energy, the indomitable perseverance of our people, that we are this day masters of the western world? The consequence—for is it not equally clear that that power, which had now extended from sea to sea, and added within a few short years, one half a continent to our imperial domain, compels us in very self-defence to conquer nature on the Pacific shore, and thus re-enact those scenes of stirring industry which reclaimed the Atlantic two centuries ago? To labor is the American's destiny. Whether at the sail, the plough, the loom or the anvil, in the laboratory, the office, the counting-room or the library, each in his appropriate sphere, with head and hand, is working out the problem of Creation. "*Laborare est orare*," was a maxim of the olden time, and might well have been the motto of America, for in every sense it can with truth be said, "we are a nation of worshippers."

Time will not allow us to dwell upon the countless forms which American industry has assumed, and by which it is perorming so large a part in moulding the spirit of the age. I would rather direct your attention to the important results which it has achieved beyond the sphere of its immediate operations. But the better to accomplish this design it may be well to refer in brief to a few of those more startling discoveries and inventions, of American origin, which have been chiefly instrumental in enlarging our national influence, either by developing our internal resources, or by spreading over the world a knowledge of our power. There are certain names, which, on occasions like this, should always be repeated, for they are connected with themes which can never become trite, till the pride of our nationality shall be crushed.

Look where on every stream and lake throughout our land, the freighted vessel speeds its way regardless of wind or tide—or venture on the broad Atlantic, and see its storm-tossed waves, vexed with the rival claims of Collins and Cunard—go where "the astonished tribes of Ishmael witness the majestic steamer riding on those waters which cover the wreck of the chivalry of Pharaoh"—or stand on the banks of the Seine, where his mighty genius was repulsed, but not depressed, by the cynic doubt of Europe's conqueror—and everywhere, be it reverently spoken, *it is the spirit of Robert Fulton which moves upon the face of the waters.*

Wherever the steam-mill resounds with the hum of industry, whether grinding flour on his native Schuylkill or cutting logs in Oregon, there do you find a monument to the memory of Oliver Evans.

And he, "the lightning-tamer," whose pointed iron guards the safety of every housetop, who taught that even the "artillery of God" was not without its purpose in the scheme of divine beneficence, has left the name of Franklin to shed immortal lustre on his native land.

Go to the "sunny south," survey her rich fields, now white with the bursting ball. Why is that harvest prized? Why sought by ships from distant shores? You can scarcely work it, for though soft and silky, it is full of seeds. What is the secret that has thus transformed a worthless plant to be the staple of our Southern States? It is the cotton-gin, which has placed the south, and all the manufacturing world beside, under a lasting debt to the genius of Eli Whitney.

And still another wonder springs from the abundant fountain of American ingenuity—a more mysterious marvel than the world has ever seen before. Men converse a thousand miles apart, and harnessed lightning is their Mercury. The bolt of Jove is become the veriest slave of Morse.

Suffering humanity shares alike in the discoveries of science. "There is not a nerve of our corporeal system but may become the channel of suffering, not an atom that may not vibrate with agony." But fell disease is losing half its terror in losing all its pain. The victim of the surgeon's knife wakes from his ethereal dream, to pronounce with grateful praise the name of Jackson.

These are a few of the illustrious men who will go down to history as the benefactors of their race, and whose discoveries have contributed largely to make up the grand aggregate of influence which our country is now exerting upon the world.

The extent and the degree of moral ascendancy possessed by the United States in other lands is a matter, which while it may flatter our national vanity, is pregnant with subjects for reflection. The proofs that it does exist are many and obvious. History shows it, and every foreign mail adds daily evidence to the accumulating mass. But the full extent and character of that influence can only be known by those who "see with their own eyes, and hear with their own ears," the work which America has wrought upon the world.

In discussing this portion of our subject I shall present illustrations drawn from personal observation, or reliable authority, and if, in so doing, it should appear to some to savor of unwarranted display, my apology must be the increased interest which is generally felt in individual experience over secluded speculation.

We know that it is usual to attribute to purely political causes those results which are most strikingly manifested in political movements. We see that revolution and constitutional reforms have attended the progress of that republican spirit which received its first impulse and achieved its first triumph in America. We are led to inquire what was the source of this spirit that even in colonial days, pervaded every portion of our land. It was the offspring of minds trained to think and act for themselves in the daily pursuits of life. It was the clear and direct result of those habits of industry implanted by nature in the Anglo-Saxon race, and strengthened by the necessities of the age. Here then we have the secret of our success, and the source of our political system.

The moral power of the United States is not solely the result of her political organization, although so often evinced in the revolutions of other countries. That a nation's influence should develop itself in this way may be accounted for by the fact that impressions produced upon the body of the people are felt by the government before they show themselves in social life, in the family, or the individual. The disposition which prevails in despotic countries to attribute every result to the government as a great first cause, leads the impoverished masses of Europe, when they hear of our prosperity, to inquire only about our political system, and then to establish a republic by force of arms, regardless of the secret which lies beyond, and can alone qualify a nation for self-government—the industrious habits and widely diffused intelligence of our people. This superficial study of the theory of American progress is giving place to more careful examination of our social system. The world is learning, at the cost of fruitless revolutions, that it is not Charters or Constitutions that can secure the prosperity of a nation—that to attain the position which America holds, it is requisite not merely to possess American principles, but to know something of American customs, to study our social life, and thereby to probe the secret of success.

The general ignorance upon ordinary subjects relating to America, which prevails abroad, has been often made the subject of amusing comment. How many of those who now hear me have been asked by intelligent men in England to give them a specimen of Choctaw or Cherokee, and how many of you have been complimented upon your proficiency in the English tongue? Such blunders one would suppose might be made by the man who exclaimed in innocent surprise that "even the children in Boulogne spoke excellent French," but one would scarcely expect such ignorance of America as is often found among English gentlemen. It would be easy to multiply instances of this character, for half the world believe us to be black, or red, and have a Chinese notion of our geography.

But neither climate nor color is involved in the matter when the conversation turns upon American prosperity. Then it will be found that a very general idea prevails of the greatness of America. Little is known of our history, our laws or our industry, nothing in detail, but there is a confused notion of heroic chievement, of political liberty of great wealth, and of unexampled prosperity and happiness, all blended together in such a way as to prepare the mind to receive almost any influence which may accord with preconceived ideas. In this condition of things it is natural that our country should be looked to as a model by other nations desiring to share in the blessings we enjoy. This is leading them to inquire more closely into our condition, and although they may not readily apprehend the whole truth, they will learn enough, and some have already copied enough, to justify the epithet which our British brethren tauntingly bestow—"the model republic."

A rapid glance at history will serve to prove that the moral influence of the United States upon the world is incalculable. Already it has thrice convulsed all Europe. Scarcely had the treaty of Paris, by the hard-wrung concessions of England, sanctioned the supremacy of the people over the assumptions of royal prerogative, when the great revolution commenced in France, which washed out in the blood of her sovereign the last remnant of feudalism in Western Europe. The warriors who had fought by the side of Washington, brought back to their homes the principles of their illustrious chief. Lafayette and Kosciusko became the apostles of freedom, France and Poland the scenes of their action.

Thirty years later the standard of revolt was raised on the hills of Greece. The spirits of Miltiades, Leonidas, and Pausanias seemed to reappear in obedience to the Pythagorian doctrine, in the homes of Bozzaris, Ipsilanti, and Capo d'Istria.

But it may be asked "what had America to do with this beyond furnishing a triumphant example of the same principles which formed the age of Grecian glory twenty-three centuries ago?" We answer that that is of itself enough, but it is not all. A nation's sympathy is not lost in air. It fires the patriot's heart and nerves his arm. The first ship that hailed with a national salute the patriot flag of Greece, when it was unfurled in the harbor of Napoli di Romania, bore the stripes and stars on her ensign. This fact is not forgotten. The aid given by private individuals in this country during that war is still remembered, and at this day the magic words Αμεριχανος ειμι "I am an American," is a passport to the heart of every Greek.

Nor had Europe only heard the voice of Liberty. South America caught up the spirit of the North, till from the plains of La Plata to the Andes of Columbia, "Independence or Death," was inscribed on every banner. The United Provinces in 1816 commenced the war, which, for eight long years, raged from Mexico to Cape Horn, till the battle of Ayacucho, the Yorktown of Peru, in 1824, made the last Viceroy a prisoner, and terminated for ever the Spanish power on the Western Continent. Even imperial Brazil scorned to be the subject of European dictation, and in 1822 declared and won her independence of Portugal.

Meanwhile, the United States was steadily advancing to the place which the God of Nature has assigned her. The freedom of the seas, which combined Europe had failed to wrest from the grasp of England, had been achieved by her valor. The practical results of the war of 1812 had been to place the sanction of the greateet maritime power of earth on the new American doctrine, that the flag covers the property. Nations, which till then had known the new Republic only as the antagonist of the mother country, began to recognise in her the successful champion of freedom, to regard her progress, and to ponder her principles.

Again the cry of revolution startled the ears of monarchs. France once more arose in her majesty, and hurled from the throne the degenerate successor of St. Louis. Again the voice of Lafayette was heard in the council, and the sword of the "American General" flashed in the van of the National Guard, as it had done in the same cause forty-one years before.

Nor was France alone in the field. The land of romantic story, of chivalrous daring, of self-devoting patriotism, the home of Kosciusko, "the friend of Washington," again aroused in her might. Who does not know that the influence of this Union upon the struggle of 1830 in Poland was something more than a name. Although the faith of treaties, and the wise system of policy, pursued by our government, of non-interference in the affairs of foreign States, prevented our extending national aid, still the great heart of the country beat responsive to every throe of Poland, and that sympathy, united with our example, added sinews to the war.

Here let me relate a touching incident which preceded the late Polish struggle, and which speaks volumes to our purpose. The renowned leader of their former contest was no more. He had died in Switzerland in 1817. Ten years afterwards his remains were removed to the free city of Cracow, and interred in the vault of its cathedral—the ancient mausoleum of the Polish kings. Near to the city is a small chapel whither he was wont to retire to mourn over the ruins of his country. On this spot his countrymen have raised an enduring monument to his memory, a lofty mound of earth surmounted by a marble cenotaph. It was done by the whole people, men and women seeking to share alike in the patriotic labor. The people arose, *en masse*, to prosecute the pious work, and on the day of its commencement a banner was unfurled above the assembled myriads of Poland bearing the pathetic inscription, and, as it proved, too the significant device, " *Kosciusko, the friend of Washington.*"

Within a few months from that day the beacon fires of revolution were blazing on every hill in Poland. Disastrous as was the event of that struggle, the result of the French revolution was more propitious. In every movement the French have hitherto made they have gained some permanent advantage, and so in 1830, displacing the direct dynasty of Bourbons, they adopted a collateral branch—the " Citizen King" swearing to support a charter, which in its terms was well nigh as free as our own constitution. How the oath was kept history has recorded.

A period of eighteen years rolled on. The " Citizen King," relying on those wily arts which had already hoodwinked his associate monarchs, deems himself secure—thinks to brave or blind his people by the glitter of an hundred thousand bayonets. In direct violation of the 4th and 7th articles of the charter, he has forbidden a meeting of citizens to discuss projects of reform. It is the birth-day of Washington, the significant day appointed for the banquet. The discussion is adjourned. A mightier question has arisen to be decided, not between rival factions of the assembly, but between the king and his people. An offer of concession is made to the outraged masses—the ministry is changed, but it is too late. A voice is heard from out the vast assemblage who storm the palace : " The people read the newspapers now, and America is not so distant as she once was." That voice proclaimed the downfall of the house of Orleans. Rapidly the contagion spread over the whole continent. But we will not dwell upon the sad picture of prostrate freedom and vanquished heroism, albeit every page of the bloody chronicle attests the moral power of our Union.

It is worthy of observation that from the beginning to the present hour the moral authority of the United States has been increasing in a ratio with her prosperity and power. At first there was the stimulus of successful example in revolutionary effort. We have seen what this achieved. And in each succeeding struggle for liberty have we not remarked how distant nations turned to gather wisdom from the light of our example, until the very name of the United States of America seems emblazed on all the banners of freedom.

May we not cherish a just pride in thus becoming the examplar of principles common to the whole brotherhood of man? What though our British friends would cast a slur upon our name, and in tones of irony have called us "the model republic." History disarms the stigma when it proves the fact. Norway, France, Greece, Poland, Italy, and all America have copied much, first from the parchment which made us what we are, and next from the constitution which keeps us so. But there is another name, only more honorable from being bestowed in all sincerity, by which other nations call us in just tribute to our prosperity and power. It is "the Great Republic." We need not look to history alone to prove our point. The unrecorded incidents of the past, the unerring signals of the present, evince the influence of America. With some it is enough we have won our freedom in open conflict with "the Philip of the seas," the dreaded tyrant which till then had stood unvanquished and unrivalled in the world, or that the "sun of Anahuac" had been eclipsed by the shadow of our conquering eagle, for Mexico till then was deemed by her feebler sisters of the South to be invincible.

To such as these the prowess of America appears of that gigantic character which marks the heroic age in the poetry of Greece. This reputation gives more security to our countrymen abroad than arms or passports can confer. Who that has borne the colors of our Union across an Eastern desert has not felt the glow of honest pride as some old Arab Sheik points to the starry ensign and tells his swarthy followers, "That is the banner of a mighty nation—I've seen it on the mast of battle-ships." There is at this moment as much security from the wild sons of Ishmael, for him who sleeps with the flag of this Republic above his tent as for him who bears a Pasha's firman.

With others, America is the land of promise, "a land flowing with milk and honey," or a country like the Paradise of the Peri, to which they never may attain, but which appears fragrant, and blooming with all the beauty of Eden. These, in the depth of their poverty, can only imagine the luxury of wealth, and fancy every wandering son of America to be the child of fortune.

Many illustrations of the prevalence of this idea might be given, but I will mention only one. It occurred among the ruins of Thebes. A little Arab boy, whose pertinacious application to be received as a guide was refused by our party on the plea of being too poor to hire him, replied in almost the only words of English he could speak, "oh no, Americans all rich."

Others again, cherishing a romantic love of freedom, are dissatisfied with any degree of liberty which seems to fall short of that possessed by us, and look on every citizen of this republic with the eye of fraternal affection. "Sono fanatico pro los Americanos," exclaimed an Ionian Greek, as he dwelt with democratic fervor on the happiness of our country, and contrasting it with his own subsidized islands, prayed that they might be transferred from the protection of England to that of the United States.

And yet again, there are nations, which, having the form of freedom, but wanting the spirit or the knowledge which self-government requires, are distracted by civil wars and divided by the rival claims of chiefs and statesmen. To these our country presents an enviable contrast. To these she is the land of prosperity and peace, and no sacrifice seems too great to make, even nationality itself, that may secure to them a portion of her heritage.

When the late war with Mexico was drawing to a close, a British resident of one of the principal cities of South America, endeavoring to excite public opinion against the United States, said to a prominent native of that place, that he "might soon expect an invasion from the North." "Ojala, que venga!"—"would to God it might come," he answered, referring at the same time to the distracted condition of his country, then in the midst of a Presidential election. Thus is it that everywhere the ideas of liberty, prosperity, and power are associated with the name of America. Go where you will, examine the condition of many lands, their laws, their society, their productions, and although in each you may find much to admire, and something to adopt, no where on this broad earth will you see united in one spot so many of those blessings which humanity craves as in this favored country. From Lapland to La Plata, and from Persia to Peru, I have witnessed every form of government, and every condition of society ever devised to bless or curse mankind; and the result of this world-wide experience has been, with heartfelt gratitude to exclaim, "Thank God, I am an American."

All nations present a market for our skill. Our arts and ideas are sought and promulgated, even where the charge of copying from America would be repelled with scorn. A few years since the foreman of the largest machine shop in the world, at Manchester, was a Rhode Islander, from Providence. The active head of the banking house in London, which has the most widespread correspondence in the world, is from Weymouth, in Massachusetts; and the late leader of the branch in Liverpool, the lamented Gair, was from my native city. The engineer of the only railroad in Russia, the late Major Whistler, was an officer in the American army, and his successor, the scientific Brown, is from the shores of Lake Erie. The superintendent of Prussian manufactures was born in Baltimore. The architect of the Turkish navy was a New-York man, and his successor was of Rhode Island extraction. And if we look to India, or our southern continent, we shall find our country fully represented in their merchants and their engineers.

We have thus enumerated some of the triumphs which our nation has achieved, and have pointed to the industrial pursuits of our people as the source of their power. Can we longer wonder that the influence which American industry has wrought, is felt "to earth's remotest bound,"

And shall we now abandon all that a wise system of protection to American industry has secured? When the eyes of the world are upon us, and Europe is sending her myriads of emigrants to people the great valley of the West, shall we scatter to the winds a fabric which the toil of years has reared, and cease to be "the model" by becoming a dependent nation? How suicidal is that policy which, with all the facilities for independence, would compel us to rely upon foreign nations for that which our own industry can furnish ?

A system which admits the pauper labor of Europe to competition with our own, degrades the American operative, and must either destroy the great manufacturing industry of the country, in its various branches, thus making us dependent for so much, or it must reduce wages from the remunerative scale which they now hold, to one of bare subsistence. In either case the farmer suffers in common with the rest. The number of consumers of agricultural produce is lessened, and the number of producers will be greatly increased. The prosperity of one department of industry is the prosperity of all, and the depression of any one must be felt by all.

It is the misfortune of this country that a measure so vital to all its great interests, in every section, should ever have found a place in the arena of party politics. It is a national, not a sectional, or a party question—like that of the Union itself—though alas! both are becoming, in our day, involved in the strife of parties.

Not thus has the measure been treated by those nations with whom we have most to do "Free trade," as it is called, is to England what Protection is to America. In both countries the object to be attained is security to labor. In England the manufacturers force the measure of free trade from the great landholders as a defence against their rapacity, and the measure is in itself one of stringent protection to the operative.

Adam Smith, a pensioned officer of that ministry who declared that "not a hob-nail should be manufactured in America," while he puts forth his beautiful theory for the benefit of other nations, is careful to remark that "it would be absurd to expect unlimited free trade to be adopted in Great Britain;" and of the famous Navigation Act, passed in the reign of Charles II, which was the most stringent protective enactment ever framed, and to which England owes her commercial supremacy, he says, "after all it must be allowed that this act is the wisest of all the commercial regulations of England." Such is the testimony of the father of free trade to the falsity of his own theory, lest it should be adopted at home. Were Richard Cobden an American, if we may believe his own declaration, he would favor the tariff of 1842. This is the position of the great champion of free trade in England in our own times.

But there are men who can neither see the distinction between the two things which are called by the same name, or discern any difference in the application of the same thing to different circumstances.

Why is it that England has the balance of trade always in her own favor and against all other countries? The wisdom of her commercial regulations is beyond praise. She consents to no *real* reciprocity in trade, but charms the world by a *nominal* equality, and lulls it by a word. There is no reason why the balance of trade with England should be against us, as has almost always been the case, except for a short time when the famine in Europe made England dependent on us for subsistence, and opened her market to our agricultural produce.

At present our commercial system would seem to be as bad as the most malevolent ingenuity could devise. Advalorem duties computed upon foreign invoices are bringing ruin upon our merchants and manufacturers alike—closing the mills of the one and absorbing the profits of the other. The inducements to fraud are too obvious and tempting to be withstood. The advantage is entirely in the hands of the foreigner. The facilities for deception by false invoices proffered by our present tariff are seized upon by the merchant abroad, who may either send two invoices, one for the custom house, and another for his agent, or where the agent has some apology for a conscience, may send but the one to enter by, thus relieving him from the legal liabilities of perjury. There is good reason to believe that instances of both these frauds are of frequent occurrence. A single example from the mass of evidence upon this point will suffice. A merchant of your city who had been in the habit of purchasing Hamburg cigars at the wholesale price of eleven dollars per thousand, wishing to make a large shipment of the article to a foreign market, applied to a German dealer to sell them to him, subject to debenture and was refused. After much persuasion, however, he prevailed, and found the article entered at the custom house at one dollar and three quarters per thousand. What honest merchants can succeed in business against such outrageous fraud as was here developed? Yet this is but one, and perhaps not an extreme instance of the operation of that ruinous system which is fast throwing our foreign trade into the hands of ambitious and unscrupulous strangers.

A system which even in its most favorable aspect, allowing each party to be equally honest, throws the business into the hands of foreigners, is unworthy of a free people. The French, the German, the British manufacturer, can afford to ship his goods at the simple cost of production. The American importer must pay not only this but also a profit to the seller. Here, then, granting that no unfair advantage is taken, but that each party invoices his goods at their actual cost, the American is undersold in his own market.

The influence of this foreign tariff is felt at our elections. The sympathy of our foreign population is readily excited in favor of their wealthier countrymen, to sustain a system which is enriching them at the expense of American industry. The foreign merchant amasses property, and then returns to his own land to enjoy the gain wrung from the privations of the American laborer.

If no other amelioration of our condition can be hoped for, let us at least have a home valuation, that thereby the American, in his own market, may be on some sort of equality with the foreign merchant. But the advalorem system, even with a home valuation, would fall far short of that measure of just and equal protection which the state of our country requires, and which specific duties only can ensure. The home valuation would be liable to vary in different sections of the country, and new sets of appraisers would conflict in their estimates with those who had preceded them.

A system of specific duties, uniform and determinate over the whole country, would effectually prevent this difficulty, would disarm fraud, and tend to improve the quality of this article, of whatever kind, which is imported—for if an equal duty is charged on all goods of the same general description, we may be sure that the better qualities will be imported, since the price will be determined only by the intrinsic excellence of the article, the cost of production being then the only element to cause a difference in price.

To the American manufacturer, at the present time, the question of protection is one of life or death. A few facts, hastily gathered at the moment, and pertaining only to a very small section of our country, will best illustrate my meaning.

Within the past month, in a circle embracing a space of only thirty miles around the city of Providence, 75 cotton mills, running more than 7,200 looms, and about 315,000 spindles, have been closed. This list probably does not contain all that have suspended operations in that vicinity during that time, although it perhaps includes a few which closed rather earlier. The largest establishment in America, employing about 800 operatives, is among the number. Many of the mills which are still in operation are running on short time, and many more will close entirely as soon as their present stock is exhausted. Of the 40 woolen mills in Rhode Island, a few are already closed, and the larger number are stopping a portion of their machinery. Here is a sad picture of wasted capital and prostrate industry; but it is one which is to be observed in nearly all departments of operative labor in every portion of our land.

The forge fires of Pennsylvania, Virginia, and Maryland are quenched. Thousands of laborers in those States are "eating the bread of idleness," and where a few months since the clang of industry resounded, silence and desolation brood.

We ask for some legislative aid which may avert the threatening tide of ruin. A high tariff we neither ask or need. Thanks to the superior wisdom of a former race of law-givers, the manufacturers of America are placed beyond the necessity of prohibitory, or of very restrictive measures.

A tariff which, if it does not discriminate in *favor* of home industry, shall at least not discriminate *against* it, by placing a higher impost on the raw material than on the goods made from it, is such as we require. A tariff for the protection of the *laborer*, not one which is enriching the capitalist by crushing the feebler operative, is what the exigencies of the times demand. Capital requires no aid; it can protect itself. The American laborer needs protection against the competition of famished Europe.

Crush our manufacturers—break down those smiling villages which are circling every mill-site in America with images of peace and plenty—sow our fields with salt, and let our ships lay rotting in the docks—prostrate every form of industry till the voice of joy and gladness is heard no more, and the wail of want and wretchedness shall fill the land—and still, capital will survive the cruel stroke. It will seek other forms of investment. It will cross the sea, and under some more cautious government, less fond of rash experiments in finance than our own, it will find a place to expand and multiply.

But where will the laborer be? He must stay behind; too poor to move and deprived of the power to work, he must drag out his days in indigence and sorrow; or he may till his little acre and earn a bare subsistence, the citizen of a country dependent on all other lands for all but bread, a country where the few are rich and the many are poor—the invariable fate of states relying solely on agriculture for support.

Away then with the insensate jargon which rails about "your lordly manufacturers." All that is "lordly" in them is what every American in a fair field, and industry and skill to aid him may secure—the wealth and distinction which pertains to "*the nobility of labor*," and the character which adds lustre to "*the long pedigree of toil.*"

How much have we achieved in commerce under the genial influence of former tariffs. With our cheap cottons we have driven England in a good measure from her own East India market. We have secured the trade of the Levant beyond the rivalry of France or England. In the bazaars of Upper Egypt, in the Thebaid, I have seen our cotton fabrics bearing the marks

Pawtucket, R. I., and of Utica, N. Y. Our locomotives found their way abroad and drove the English from the markets of Central Europe. And now that recent treaties with South America have placed us on the same commercial footing with Great Britain, a rich field for enterprise is opened in those countries. Let us not abandon the vantage ground which our industry has gained. Let us be true to ourselves, that our country may press onward with unfaltering step in the march of prosperity and power.

I have thus far, gentlemen, endeavored to direct your attention to some of the results which American industry has achieved, to show how it was instrumental in framing our political institutions, and thus in securing to our country an incalculable influence on the destinies of the world. I have traced the effects of that influence in the revolutions of nations, and in the milder forms in which it is developed, and I have considered the doctrine of protection, as "the one thing needful to preserve the interests of American industry unimpaired."

One subject more presents itself and demands our serious attention. It is one before which all others shrink to insignificance. It has been said that the industrial interests of the United States might survive their Union. True it may be so—as the fragments of the Memnonium survive the armies of Cambyses, to show what Thebes has lost—as the riven oak survives the thunderbolt, to wither and decay—as the tribes of Israel survive the curse of God, to be the reproach of men. It has been said that manufactures and the Union are alike "rooted in interest and attachment beyond the power of those to rend or destroy, who can calmly calculate the value of the one, or blindly deny the importance of the other." The time has come when both these contingencies, supposed impossible, are realized: one *is* sacrificed to the spirit of party; the other, if not "calmly calculated," is at least madly assailed in the blindness of sectional strife.

If we would not destroy all that we have created, involve ourselves in ruin, and dash the cup of hope from the lips of expectant man; if we would not belie the language of our glorious declaration, and tear open with sacrilegious hands the graves of its immortal signers; if we would not have the name of "Washington" a word of scorn, and the title of "Republic" a synonyme of "folly;" if we value our country more than our own self-interest, and our Constitution above the narrow limits of our State; if we fear God who has ordained us for his work, or regard man who waits its fulfillment at our hands,—*we must preserve the integrity of our Federal Union.*

Can it be that any considerations of sectional interest or private ambition can operate to annul, in the mind of a single man, the solemn responsibilities which attach to him as a citizen of "the great republic," as an American and as a man! How blinded by the passion of party, or deceived by the foly of satanic ambition, must he be who would think to rear himself a monument from out the ruins of this glorious national fabric. Such fiendish counsel should excite only the pity or the ridicule of men, although it be urged with all the eloquence of Lucifer. "In Union there is strength"—a maxim older than Esop, and acknowledged in the foundation of this Republic by those now beatified spirits who responded to the first prayer in Congress.

So long as this Union sustains its name, the Great Republic, pursuing the prudent policy of its founders, developing its vast industrial resources, and everywhere making itself respected, it will be the beacon-light, for ages hence, to guide the new-born nations in the path of liberty and peace.

But should we fall—"eye hath not seen, or ear heard, nor hath it entered into the heart of man to conceive" the untold horrors that await us.

My countrymen, let our daily labor and our nightly prayer be for *protection to American industry, and the* UNION OF THE AMERICAN STATES.

ADDRESS

Of Hon. HENRY W. HILLIARD, of Alabama, before the American Institute. Delivered at Castle Garden during the Twenty-third Annual Fair, October 14, 1850.

With some remarks, by GEN. TALLMADGE, President of the Institute.

On Monday evening, Oct. 14, 1850, an Address was delivered before the American Institute, at Castle Garden, by Hon. Henry W. Hilliard, of Alabama.

A large and attentive audience having assembled at the appointed hour, Gen. James Tallmadge, President of the Institute, called the meeting to order, and opened the proceedings with the following remarks:

FELLOW CITIZENS: It is with great delight that we again meet you upon the occasion of the Great Fair for Agriculture and Mechanic enterprise. The occasion is one of great moment to the laborer of our country; and to that portion of our community to which we look for the promotion of our industry, and, when it is necessary to be the champion of our country's rights in the open field.

Under this view of the subject, our custom is to ask some friend to be attendant upon the occasion for the purpose of delivering an Address. We have had the great good fortune to find such a friend from the State of Alabama—the Hon. Mr. HILLIARD; he, who, when recently in the angry debate on the floor of Congress, some talked of the dissolution of the Union, rose in his place and said, though a Southern man he was for the Union. I ask the pleasure and honor of introducing him to this audience for a short Address.

Mr. Hilliard then rose, amid loud applause. He said:

I feel myself honored, fellow-citizens, in being thus introduced to you by the venerable and distinguished President of the American Institute, who has so long devoted his talents and energies to the cause of industry, and the development of the resources of this great State.

And I feel myself honored, too, in being thus received by you, representing as you do the industry, the skill, the wealth, and the enterprise which are so rapidly advancing our country in civilization.

I come to you from a distant State—a State known to you mainly so far by its Agriculture, yet not wanting in Mineral resources, and already engaged successfully in Manufactures. But, coming from that State to this Emporium of commerce—this city which has already outstripped every city on the Continent of Europe, and which is destined soon to rival the great Metropolis of England itself; coming to this city, I feel there are some considerations which bind us together in common sympathy.

I can, on the present occasion, when there is so much all around you to interest you, advert to but one or two of these considerations. The first of these is, that we belong to the same country; we are all Americans; we are all citizens of one Government. I come from a State washed by the waters of the Gulf of Mexico, and I am now in a city belonging to a great State, washed by the St. Lawrence, and stand this evening in a building against which the waves of New-York Bay break; yet the broad expanse which stretches between New-York and Alabama, between your home and my home, is our common country. Every part of it, every plain and mountain, and stream, and village, and city, all belong to us; and over the whole extent of it, the same great and beneficent political system spreads its majestic proportions.

The same flag that floats over your shipping, floats over ours; the same historic recollections which warm your hearts, warm ours; and the same future that has opened to your eyes, has opened to ours. Diversities I know there are; great States called by different names there are; but they are not hostile States. No fortress frowns upon the streams which mark their boundaries; it is but an extension of the same family; they have spread from the Atlantic shores to the Mississippi—to the Rocky Mountains—to the Pacific Coast—but they have borne with them everywhere the same religious and political institutions.

As Americans, therefore, I know that in this we shall sympathize with each other—we have a common country; common in its origin, common in its history, and common in its destiny. There is another consideration to which I will advert. It is this: We are all alike interested in the success of American Industry; we feel we are pledged to this great cause. The industry which belongs to the North, interests us of the South; and, gentlemen, I say to you, standing here as a representative in the Congress of the United States, in my judgment the common government ought to grant a wise, moderate, and steady protection to American Industry.

I believe that Agriculture—the first great employment of man, the noblest employment of man; agriculture, which takes one from his fireside into the fields, where with the plough he turns the soil to the face of heaven and casts the seed in with his hands—agriculture should enjoy the support of the government; whose protection should also be equally extended to the Mechanic Arts. Let the artisans who labor at the forge or in the workshop feel that his government cares for and protects him, and he will feel an interest in the prosperity of his government.

I regard this exhibition as one of the noblest displays of American character. It is like America!

Some years since, when in Europe, I witnessed an Exhibition of Industry in Paris; it was composed chiefly of articles of beauty and grace. Every where the eye rested on some article, marked by exquisite skill. Everything attested the perfection to which art had been carried in some of its branches.

But when I entered your Fair to-night, I found that you are employed chiefly in the production of useful articles. I found here the plough, the scythe, the axe; and among these the manufactures of our looms. Of all the branches of human Industry and specimens of excellent skill, the great elements I see are those of power; mighty Industry spreading happiness over the land.

In former times wealth and industry were expended for the benefit of the few. The head of a powerful dynasty, one who had his retainers, enjoyed chiefly the result of their labors. It is not so now. The skill of the Mechanic, the power of the Artisan, and the wealth of the Capitalist—these are now employed for the benefit of the masses; not to make the great greater and the rich richer, but to spread comfort among the masses, to make the firesides smile with happiness and their children rejoice in the home of Industry.

This is the great picture which America presents; Industry diffusing wealth among the masses. It is a glorious spectacle of wide-spread happiness. The tendency of our institutions is to diffuse wealth, rather than to concentrate it in a few hands; and I rejoice that it is so. But understand me—wealth is entitled to protection as well as industry. I have no sympathy with that class of reformers who would strip the wealthy of their possessions, and scatter them abroad in the vain hope of augmenting the sum of human happiness by destroying the great principles which bind society together. Far be it from me, gentlemen. I would have every man enjoy his individual property; I am for that sort of industry which spreads wealth among the laboring classes, and elevates them gradually to the scale that rises above them.

Government is constituted for the good of those who support it; no government can be stable, or powerful, which is not administered for their benefit. I find that I have announced a great political doctrine; it is one which history teaches, and future generations will write it upon the face of the whole earth. No government ought to stand which overlooks or neglects the welfare of its people. The American Government, the greatest popular government which the world has ever beheld, is established for the protection of its people in all their rights at home and abroad. When the American citizen quits his own shores, he looks to his government for protection against the tyranny of other governments,—upon the high seas he feels in the flag that floats over him, ample security, because the whole power of America goes with that flag,—and wherever he may go in his travels, he feels that his far-distant home guarantees his safety.

But, gentlemen, this is not the only object for which our government was established. The citizen must be protected in the enjoyment of the fruits of his industry. The government, in conducting its great operations, must not overlook the individual prosperity of its people, or sacrifice their personal welfare merely to advance the wealth or the glory of the State. It should in its action, foster the labor of its people. I do not mean that it should shower benefits upon the indolent; far from it. We raise our revenue by laying imposts. Now are we to do this for the purpose of raising the greatest amount of revenue and thus increase our Treasury? Far from it. We are so to lay them upon Foreign Imports as to discriminate in favor of our own industry; not so as to keep out the foreign article, but to do what shall result to the benefit of the producer at home. While we thus raise an ample revenue, and carry on the government, we shall make the system tributary to the prosperity of the whole country—the North and the South—and to all classes—the manufacturer and the planter.

And now, gentlemen, allow me to say, speaking to you as a Southern man, that the diversified interests of our great country must all be respected. There must be no war made by the South upon the property and the industry of the North; nor must there be any war made by the North upon the property and the industry of the South. I appeal to you, Mr. President, distinguished as you have been in public life, personal character and mind, to hear me, when I utter this great truth. We must make no war upon your property and industry, and you must make no war upon ours. This is the great conservative element of our Union; it is only upon this grant that we can hold together as a general government. We are one people—with a common origin; our interests, however diversified, are yet kindred and dependent; our history and our destiny are the same. While we understand each other in this repect, there is no difficulty in upholding the government. I am a Southern man by birth, by education, by innumerable and indestructible ties; my ashes will mingle with Southern soil; but my heart beats with exaltation, which I should attempt in vain to express in words, when I survey the growth, the prosperity, and the rising glories of this whole country. Your resources, great as they are—your wealth, teeming as it is—this magnificent display of mechanic art—none of this awakens within me any jealous or unworthy feeling. I rejoice in your prosperity—I would cheer you in the bright career which opens before you; all this constitutes a part of the power, the glory of my country; and I look forward to the day when, in the midst of the great agricultural regions of the South, a varied industry will appear to add new embellishments and new riches to a region for which Providence has already done so much. Our manufacturing establishments are multiplying, and will, I hope, soon rival yours. My own State is making rapid progress in this way. It is with this feeling that I greet you this evening—an American citizen, addressing American citizens!

I desire the Union of these States to stand through all coming time. On the occasion to which my honorable friend, the President, has referred, I said in the House of Representatives what I am happy to say here: "I have never looked to a destruction of the government, as a remedy for existing evils. Rival States would soon become belligerent States, and armies would be employed to decide the supremacy between them. The flag that floats, to-day, over every part of our wide-spread country, from the banks of the St. Lawrence, in full view of the British possessions, to the shores of the Pacific, where it catches the eye of the navigator returning from Asia, and from our ships, which bear it upon all the waters of the earth, is known and honored as the ensign of a great and powerful Republic. It is associated with all the glories of our past history; its folds glitter before the eyes of mankind as the sign of hope and universal freedom; and I trust that it will forever, fly over States free, properous, and kindred; not divided into petty principalities, or feeble leagues, but united as they are to-day, under a government, the freest, the happiest, and the noblest upon which the sun has ever shone."

The sentiment I adhere to—here and elsewhere I proclaim it—I desire to see the UNION which binds these States STAND. To perpetuate it, we must be just to each other.

We occupy a great central position; Europe lies on one side of us, Asia on the other; and if we hold together as one people, no glass is broad enough, or clear enough, to read the horoscope which the Future opens before us. Here agriculture will yield its exhaustless treasures; here commerce will bring the products of every clime; mechanic industry will achieve its greatest triumphs; the arts will produce their noblest works; intellect will accomplish its highest labors and exhibit its grandest discoveries; civilization will here make its abode, and surround itself with every thing which can adorn and brighten human life.

Let us then stand by the CONSTITUTION. The enemies of the Constitution are the enemies of the government—the enemies of the country. The Government cannot exist unless the Constitution is to be obeyed. If some of its provisions seem to bear hard on you, you must remember that some of its provisions seem to bear hard on us. The Constitution must be respected—its authority is supreme. We must bear and forbear. When a crisis comes, which appeals to our sectional sentiments—a crisis which would array the North against the South, let us rekindle our patriotism, by going back to the scenes in which the great and good men took part, who formed the Constitution, and we shall learn from them to deal with each other as members of the same great family, and to cherish a patriotism broad enough to embrace our WHOLE COUNTRY.

I thank you, fellow-citizens, for your kind indulgence in bearing with me, and for the very cordial manner in which you have responded to the sentiments which I have ventured to express.

The Hon. Gentlemen then resumed his seat.

The Governor's Island Band struck up an appropriate air.

The President of the Institute, Gen. Tallmadge, then made a few remarks substantially as follows:

FELLOW CITIZENS: We have the pleasure to-night to ask you to look about and witness the remarkable fact that you are now standing in the largest room in America, if not the largest in the world, and that this is filled with the domestic products of your own country in various departments. Our public officers are now taking part in the national prosperity of our manufactures by extending over them the protection of the laws. I hold in my hand a communication from the American Consul of Upper Egypt, transmitting a specimen of "Mummy Wheat" disentombed from the ruins of Thebes, where it has been for two thousand years. This wheat is still enclosed in its original envelope, and retains its powers of vegetation. It was forwarded to Hon. EDWARD STANLEY of North Carolina, and was by him kindly communicated to the American Institute. We acknowledge it with thanks to the individual, not unmingled with hopes for the perpetuation of the present happy condition of our county.

The proceedings of the evening were concluded with the music of the band; and the assemblage then dispersed.

ADDRESS

Delivered at the close of the Twenty-Third Annual Fair of the American Institute on awarding the Premiums, by James Tallmadge, LL. D., President of the Institute, at Castle Garden, October 23, 1850.

Reported by AUGUSTUS MAVERICK.

The closing address at the Twenty-third Annual Fair of the American Institute in the city of New-York, was delivered by Hon. JAMES TALLMADGE, President of the Institute, at Castle Garden, on Wednesday evening, Oct. 23, 1850, before a large and attentive audience.

Gen. TALLMADGE spoke extemporaneously, and in substance as follows:

FELLOW CITIZENS:—We rejoice to meet you again on this Twenty-third Anniversary of the American Institute, and on occasion of awarding the Premiums of the present Fair, for success in competition, for excellence in improvement, and for domestic productions. We appreciate that from our infancy to this day of manhood of twenty-three years, the people of the city of New-York, of this state, and of the United States have been our friends, our patrons, our champions and our contributors whenever occasion required. We feel the obligation, and avail ourselves of this occasion to return our thanks for the support and patronage which you have so liberally bestowed.

To you our patrons, therefore, it becomes a high duty that we should begin our proceedings this evening with rendering a report of our finances for your consideration. It affords me pleasure to tell you that these Fairs were first held twenty-three years ago in a small and common room; now they require the use of the largest room in America, besides the machine room, and the long avenue leading into the Castle. Look around you now, and behold the scene which presents itself.

The receipts from this year's exhibition have been about twenty-two thousand dollars; and, counting our free tickets given to charitable institutions, to distinguished individuals, to common schools, and to others whom propriety would admit to receive them—added to those who have entered upon the payment for their admission tickets—we can say that we have had three hundred thousand visitors at the Fair during the last three weeks. These facts show the tone of public sentiment—the love of order, industry, domestic production, and the pursuits of peace. Out of these moneys, our expenses will be first paid; and then, the amount required for the Premiums awarded, and the balance reserved as a payment upon the debt incurred for the Library, and purchase of the house and rooms, 351 Broadway, for our convenient accommodation. We feel, and we have a right to say that our finances, as well as our popular condition, stand with the utmoat manifestations of prosperity. It is matter for some exultation that *Eighteen States* are now represented here in competition for the premiums of the American Institute; among which the Institute hailed with great satisfaction Georgia, Virginia, South Carolina, Louisiana and Texas.

The occasion, continued Gen. T., invites us to a slight retrospect, and seems to render it a duty to submit a few isolated remarks on the past and present condition of our country.

Holland, in her bygone days, as an opening to her surplus population, Colonized and settled the now Middle States of the United States. England was torn asunder by her intestinal commotions. With miserably imbecile monarchs; with an unprincipled aristocracy and a corrupted nobility; with a people burthened, taxed and oppressed; with every right violated and almost every wrong inflicted, which incapacity and misrule could devise—she sought refuge in religious persecutions, in the shedding of blood, in the beheading of her kings, and in civil war. She too in the throes of her affliction, nndertook colonization. The then Southern portion of this country was blessed with a climate genial and a soil fruitful beyond comparison, surpassing in richness even the lands of Egypt. The sprouts and scions of titled greatness, crowded at home, were established there in the relation of Master and Slave; and to produce for export, while looking for supplies to import from the parent country. Thus early was implanted the deep feeling derived from the Spaniards, which spread to other countries during the dark ages, but which is now against Commerce and Manufactures, with a peculiar Institution, opposed by the civilized world. The genius and the dignity of Labor fled the land.

The eastern portion of this country, now known as New England, was in those days deemed a God-forsaken region, cursed with a climate too inhospitable for a Christian to endure, and a soil too barren to afford even to labor anything beyond a miserable subsistence. The government, however, wearied with the cutting off of heads, and at length convinced of the great truth "that the blood of the martyrs was the seed of their church," graciously concluded the region was good enough for Puritans, and that the good of the parent country thereafter required only the expulsion and exile of such transgressors to such a place. The door was then shut against the prosperity of the Colonies, by laws making it a penal offence to undertake Commerce, or to attempt to Manufacture, even for their own supplies. They were required to remain mere consumers of supplies from the parent country. This region became the land of the Pilgrims,—the home of Industry, of Law, of Liberty, and of Religion.

The Puritans introduced the congregational polity; the Puritans introduced also the free schools. In the log huts of the early settlers in Massachusetts were commonly found the Bible and 'Paradise Lost.'

"Full of faith," says Sir C. Lyell, "and believing that their religious trusts must be strengthened by free investigation, they held that the study and interpretation of the Scriptures should not be the monopoly of a particular order of men, but that every layman was bound to search them for himself. Hence they were anxious to have all their children taught to read. So early as the year 1647 they instituted common schools, the law declaring 'that all the brethren should teach their children and apprentices to read, and that every township of fifty householders should appoint one to teach all the children." Very different was the state of things in the contemporary colony of Virginia, to which the cavaliers and members of the established church were thronging. Even fifteen or twenty years later, Sir Wm. Berkeley, who was Governor of Virginia for nearly forty years, and was one of the best colonial rulers, spoke thus, in the full sincerity of his heart, of his own province, in a letter written after the restoration of Charles the second :—

"I thank God there are no free schools or printing, and I hope we shall not have them these hundred years; for learning has brought heresy, and disobedience, and sects into the world, and printing has divulged them, and libels against the best government. God keep us from both."

Such are two opposite views of the value of learning which still agitate the world.—*Edinburgh Review, October*, 1850, *p*. 185.

These peculiarities of origin and education between the extreme parts of our country, had given character to the inhabitants, shaped their minds, their habits and their pursuits. They have produced results of rare and curious diversity, and marked the great truth that

"'Tis education forms the common mind,
Just as the twig is bent, the tree's inclined."

Unjust legislation, with continued taxation and oppression by the parent country, aroused colonial sympathies. This school of adversity led to the CONFEDERATION of the Colonies, sustained the war of Independence, and produced the glorious UNION of these States. In the CONVENTION for the forming of the CONSTITUTION, the bias of early education soon became apparent, and marked the course of its proceedings. One of the first measures received and kindly entertained by that Convention, was a proposition, that no law regulating *Commerce*, should be passed by CONGRESS, but by votes of *two-thirds* of each branch of that body. It was long debated, and came well nigh producing an explosion of the Convention. At length Massachusetts, Connecticut, and New-Hampshire voted against any law to prohibit the *slave trade* before 1808, as a COMPROMISE; provided the southern States would gratify them, in return, by not laying the *restriction of two-thirds* on the power of Congress to regulate Commerce.*

The fruits that grew from such diversity of seeds are yet in partial vegetation, and mark as a sequence the measures and proceedings of the present day. We are now in full tide of commercial, manufacturing and agricultural prosperity. Our country, small at beginning, now covers America, in the fullness of its power. We have increased from a few colonies to be the nation of this continent, and we stand proudly prominent in the civilized world.

The population, wealth, strength and prosperity of the Northern States are quadrupled by reason of their Commerce, Manufactures, Internal Improvements, and labor-saving machinery. Massachusetts has over eight hundred miles of Railroad. New-York has her canals, and about 1200 miles of Railroad. The Southern States, after an age of resistance, and without material advancement on their part, have come to realize and appreciate this important fact, and are now fast entering into the competition, in all its varieties. With their climate and soil, the articles of Madder and Tea, and the Vineyard, will afford them new staples.

"The *Georgia Helicon* sets down the number of cotton mills in the States of Georgia, Tennessee, South Carolina and Alabama, at 98, in which are invested about $1,000,000. Some 16,000 hands are employed, and 152,000 spindles. They consume 94,000 bales of cotton per annum." It is believed these statements are short of the reality. They do not include the whole South, nor show one-half its recent investments in business pursuits. Many new enterprises are on foot at the South. If the present year does not, the addition of a second year will show many more millions invested in their successful industrial pur-

* Journals of the Convention—Published 1818, by order of the 15th Congress.

Communication of Luther Martin to the Legislature of Maryland, 1787.

Letter of Gov. Randolph of Virginia, against the Ratification of the Constitution of the U. S., without the TWO-THIRDS clause against the power of Congress to legislate on Commerce, 1787.

The Journal of YATES and LANSING, &c., &c., published at Albany, &c. [Genet, &c.]

suits. The Southern Press would confer a favor to collect and publish correct information on this subject.

Mr. Madison in 1787, said, "The great danger to our general government is, *the Southern and Northern* INTERESTS, *of the continent being opposed to each other.* Look to the *votes in Congress, and most* of *them stand* DIVIDED *by the geography of the country, not according to the size of the States.*" This apprehended danger seems now to be fast receding. The South cannot but understand that, in addition to their present agriculture, with the advantages of climate and soil which nature has so kindly bestowed upon them; with commerce, manufactures, labor-saving machinery and Internal Improvements, with Railroads and the use of the streams intersecting their land, they have abundant highways for individual and national prosperity.

Nevertheless,we yet sometimes have collisions. The purpose of the American Institute is to maintain that it is the duty of all to harmonize, support the flag that spreads over our country, and to uphold that Union which secures happiness to all the subjects of this government.

The occasion forbids that we follow out the course of general remark which it would delight us to present. We will therefore ask you to cast your eyes around this room, and remember the contrast presented twenty-three years ago, to that which now meets your gaze. Then a small room afforded space for our domestic productions and our auditory. Now, we stand in the largest room in America, filled to overflowing with domestic productions, and with an auditory of which a small part only can gain admittance, pressing upon us. These circumstances show the spirit of the age, and mark an era in civilization. We have, in addition to this, an adjoining Machine Room of two hundred feet extent, with a steam engine in motion, and shafting the whole length of the room, filled with specimens of improved machinery which ought to be the admiration of our country. Ingenious men must travel thousands of miles before they can see concentrated, and in action, such varieties of scientific and mechanical skill, as are seen in yonder room. In few countries o the world can be produced such specimens of labor-saving machinery, as are there displayed. The great object of this exhibition is to stimulate laudable ambition, to awaken generous and friendly competition, and induce our friends to come hither and exhibit the results of their skill, to stimulate and improve others for the public good.

This Society was incorporated by the Legislature of this State to promote Domestic Industry, in the encouragement of Agriculture, Commerce, Manufactures and the Arts. In regard to Agriculture, remember that on your entrance here, the whole approach and the long avenue leading up to this saloon is filled with agricultural implements; and it is said in Europe that we surpass every country in this class of manufactures. This Fair exhibits a concentration of agricultural implements, which for delicacy of finish and adaptation to the uses for which they were designed, have not before been equalled.

I cannot forbear on this occasion to say that the agricultural population need superior Intelligence, and require better means of Education than are now provided by the Government. They want a knowledge of chemistry to show them the analyses of the soil—the constituent parts most requisite for each crop, and how to remedy any discovered deficiency by the application of the most suitable fertilizers, either mineral, animal, or vegetable.

A letter recently received from Prof. Mapes will sufficiently illustrate:

"Gen. Tallmadge,

"*Dear Sir*—During the last winter I made an analysis of soil from a field which refused corn last year, and found the soil deficient in the following constituents:

Chlorine,
Soda,
Phosphoric acid,
Lime,
Potash,
Ammonia.

"The last spring I applied a compost of common salt, decomposed by lime—thus supplying chlorine and soda; spent bone-black of the sugar refiners, which furnished phosphoric acid; Peruvian guano containing potash and ammonia—to which was added a small portion of charcoal-dust and plaster of Paris, to retain the volatile portions.

"The above was added to the soil at an expense of $1,31 per acre, and the field planted with corn. The crop is now standing, and the committee of the American Institute on Farms will state to you that the crop will probably be from fifty to seventy-five bushels of shelled corn per acre; they having visited the field last week.

"During the last three years I have visited many farms in New Jersey, at the request of the owners, and have advised modes of manuring founded on the chemical constituents of the soil, desired crops, &c., &c., and in no one instance has the experiment failed to produce superior crops. Among these I may mention that several have raised over one hundred bushels of shelled corn per acre, and other crops in proportion. Fifty-seven bushels of wheat has resulted in one case, and forty to fifty bushels in several. Three hundred to four hundred bushels of potatoes, one thousand bushels of carrots, nine hundred bushels of parsnips, seven hundred to thirteen hundred bushels of ruta baga turnips—have been frequently the result per acre of proper tillage and judicious manuring."

The speaker said, that it was a matter of regret to every one interested in the improvement of agricultural science, that our State, which had been so open and generous in creating common schools—which had provided so many Colleges to promote education in the Classics, and in almost every department of science, had as yet made no provision for an Agricultural School. The American Institute had for several years made unsuccessful applications for the establishment of such a School; and in 1847, made a provisional agreement for the purchase, *by the State*, of a farm of about 150 acres, at Morrisania, for $21,000, to be held by the State for an agricultural school, and for education in civil engineering, surveying, and in the mechanical and industrial pursuits of common life. A petition was presented by the American Institute accordingly to the Legislature, to purchase the farm. The petition was unsuccessful. The funds of the State were inadequate to such a purpose, but sufficient only to continue, by their concert of action, the annual bounties to the several Colleges. Mr. T. said it was understood that the above farm had since mostly been sold at $1,000 per acre, and the remainder was selling at the same rate. The benefits of individual patronage and objects of sectarian influence have sustained this unequal control and monopoly of the appropriations for public education. Painful, I repeat, that with an expenditure of $254-800 in this State, the last twelve years only, for colleges, not a single institution has been established for education in agriculture and the mechanic arts. The terms of admission and continuance into most of these Colleges require the students to bring an acquaintance with, and continue in the study of the classics and dead languages. This has hitherto precluded the admission of mechanics and agriculturists, and those who design to follow the pursuits of civil engineering, and other occupations of practical life. To abolish privileges, give equal rights, foster education, and promote industry, will but advance the public interest.

With a sound, practical education, a boy in this country is armed with the means af commanding success in life—he stands on the same platform as the sons of his rich neighbors—starts with them on an equal footing in the race of enterprise—and the self-reliance, which is the peculiar property of the poor boy, is more than an equivalent for the dollars of the rich one. The intelligence of the community is the wealth of the State—the foundation and keystone of republican institutions—the guarantee of law and good order. Require a boy from the common school to learn the classics as the rule of his admission to an higher seminary, to get an education for his industrial pursuits, you blight the benefits conferred, and leave him to error, or drive him to despair. Give a boy MONEY, and you may see him spend it in profligacy, or lose it by misfortune. Give him an EDUCATION for industrial pursuits, you fit him for life, and you give him that which no misadventure can take away—no creditor seize—no calamity destroy.

Education thus brought into practical utility, and into unison with industrial pursuits is productive of immense public advantage. When the hands are employed in their pursuits the educated mind sees wisdom in the forms of the implements and in the revolving wheels discovers defects, plans improvement, and learns that the profoundest of the sciences are embraced in the pursuits of his daily occupation. The experienced laborer becomes the scientific inventor of the most useful and intricate machinery. It is from such beginnings, and education derived from such fountains, that skilled labor has its value, and to which the public are indebted for the adaptation of the useful sciences to practical purposes; and for the greater advance and improvement in labor saving machinery—greater within the last one hundred, than during the preceding eighteen hundred years.

Education and industrial pursuits create wealth, lead to public peace, to national prosperity, and to individual happiness. The enjoyments and the comforts of life are greatly augmented, and educated man now holds a new grade in the scale of human beings.

It is time the few should cease to monopolize and reject the many, and that the middle classes of society should have schools provided, and be allowed to partake in the distribution of the public funds.

A letter of request to the Comptroller of this State, to be informed of the number of colleges in the State; the amount of endowments for the last few years for their support, and also, the amount bestowed upon agricultural or mechanic institutions, has obtained the following official certificate:

Amount paid from the Treasury, on account of Appropriations to aid Colleges, from 1838 *to* 1849, *inclusive.*

	1838.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	Total.
University, New-York,	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$9,000	$9,000	$9,000	$7,000	$3,000	$4,000	$77,000
Geneva College,	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	3,000	3,000	3,000	63,000
Medical Institution of do.,	......	......	......	5,000	5,000	5,000	1,000	1,000	1,000	1,000	1,000	1,000	21,000
Hamilton College,	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	1,500	3,000	3,000	34,500
St. John's College,	......	......	......	......	......	......	......	......	......	......	3,000	2,500	5,500
Madison University,	......	......	......	......	......	......	......	......	......	......	3,000	3,000	6,000
Albany Medical College,	......	......	......	5,000	4,000	6,000	1,000	1,000	1,000	1,000	1,000	1,000	21,000
Genesee Wesleyan Seminary,	......	......	......	......	......	......	2,300	2,300	2,300	2,300	2,300	2,300	13,800
University of Buffalo,	......	......	......	......	......	......	......	......	......	1,000	1,000	1,000	3,000
Union College—lottery &c., before this date,													
Columbia College, New-York, do													
	$15,000	$15,000	$15,000	$25,000	$24,000	$26,000	$22,300	$22,300	$22,300	$16,800	$20,300	$20,800	$244,800

College of Physicians and Surgeons, New-York, has received during the above period, $500 annually, ... 10,000

$254,800

"No aid has been extended, as yet, for the establishment or support of an Agricultural Institution."

September 26, 1850.

W. HUNT, Compt'r.

The Assembly Journals of 1823, page 138, contains a Report to the Legislature, by Judge Buel, showing that grants had been made to Colleges, &c., before and up to 1820, as follows:

To Hamilton College,	$106,800 00
Union do	418,500 00
Columbia do	113,275 00
Physicians and Surgeons, New-York,	68,100 00
do western district,	15,000 00
Historical Society, New-York,	12,000 00
Total,	$733,675 00

It is said, the grants the next eighteen years, from 1820 to 1838, are in amount about equal to this table. The statement is not at hand to fill this space, up to 1838.

We call for a proportion of these funds for the education of agricultural, commercial and mechanic students, and those aiming at civil engineering and the industrial pursuits of common life. In order that you may understand the force of this claim, remember that about 80 per cent. of our population belongs to agriculture. Fifteen per cent. to commerce and the mechanic arts. Five per cent. in proportion to population, is composed of the professions of law, medicine, and divinity; the latter being less than one per cent. The students of law and medicine, pay their tuition. With this small proportion, all the colleges in the land have required, in their rules of admission, that no student can enter unless he passes an examination of the four Evangelists, in Greek, and certain Latin and other classics. They are close corporations, and marked by exclusions. Thus all the children of mechanics and agriculturists are shut out from the advantages of these institutions. It is not my purpose to say that it is wrong to cherish the dead languages; to cherish and foster colleges; but it is, to say that when so much is given to the *five per cent.* of professional pursuits; or more truly to the one per cent. of the Clergy and the Beneficiaries, something is due to the *ninety-five* or *ninety-nine* per cent. of this community who pay the taxes in relation to the means of education. There is now too wide and too long a space between the common school, and even these colleges, to remain unoccupied. Provision is required for intermediate education, for those in the industrial pursuits of active life. It may be accomplished, either by the establishment of separate Institutions, or by requiring the several Colleges now established, to create a second Department, to teach the living languages and the sciences for practical life, and to admit students with the right of selection of the studies which they will pursue, and to award them credentials according to their proficiency.

The University of New-York, after much discussion, was incorporated in 1831, with the declared object to create these two great departments in Education. In 1837, the address delivered on the dedication of the building, again declared the object of the University to have these two departments of Education; and it gave many of its details, by the authority of the Council. It was so established and organized, and several machinists and persons engaged in mechanical and other business pursuits, now living in this city, were so educated, and hold the credentials of the University. *This department has there latterly fallen into disuse.*

It is understood that Geneva College several years ago organized and established to a certain extent this second department of education for the Industrial pursuits of common life, and that the same is continued there in full use.

Union College has also three or four years since organized a like department for education, fitting the students for the industrial pursuits of life.

The Brown University of Rhode Island, upon a lucid report from its able and worthy President, has recently opened that institution to the admission of students seeking the second department of learning for their preparation and admission to the pursuits of active life. These cases of Union College and Brown University stand as witnesses of the liberal and enlightened minds of a *Nott* and *Wayland.*

Yale College has its able "Professor of Chemistry," but I am not informed that the students who do not first enter under the "Rule to study the dead languages," can be admitted to the recitations.

The greater number who bring the improved machinery and articles of manufacture now before you, presented for exhibition, on enquiry are found to be self-educated and self-made men.

Will you look at the specimens of manufacture that have been presented for exhibition. On looking at them, we feel the triumph achieved by American genius and skill, and we fear not the competition of others in these important branches. View also the proud triumphs of agriculture that are spread in abundance before you; here are wheat, corn and vegetables, which in variety and quality are truly matter of admiration. The great truth is established, that in agriculture and cultivation, we are improving beyond all parallel.

With the use of glass, and the aid of solar heat only, the foreign grapes are now successfully raised among us, and are equal in size and beauty, to those raised where they are indigenous. Our city is singularly happy in its locality. In addition to the surplus and abundant fruits of its surrounding horticulture and agriculture, numerous Railroads with their cars loaded with the productions of the east, the north and the far west, are hurrying to its centre—while steam, freighted with the collections from the South, and the West Indies, is hastening to this great mart of business and commerce. Few cities in the world have such variety and abundant supply of all the luxuries of the land, and such a promise of prosperity.

Georgia has presented the finest upland cotton ever produced. Its superiority comes from cultivation, from a careful selection of the seeds, and the improvement of the soil. South Carolina presents a buggy, or single wagon, of great beauty of workmanship—from a factory, the proprietors of which now employ forty hands in full work ; which, with the cotton factories and other establishments now being erected in the South, augurs well for the opinion that is daily gaining ground, that the South will soon come to believe that they have the same interests, and that the same legislation required by the North is also required by them. This is a subject for much congratulation to the country at large, and is a pledge that the day is not far distant when they who are supposed to be hostile to the maintenance of the Union, will contribute much to its greater support and glory. A just system of Manufactures and Internal Improvements, with Steamboats and Railroads pervading every part of our land, like the veins and arteries in the human frame, gives health and prosperity, and secures to us Union and independence.

The American Institute avows itself the friend and advocate of Free Trade, but it is that kind of Free Trade which is reciprocal, and not free on one side only, but equal to both. The condition of the people of Ireland, or, if you please, of British India, marks the desolation consequent on an unequal free trade. It illustrates the destiny and certain ruin of a country which allows its food, or the produce of its soil to be taken in an unequal trade, for the *fabrics* of another. A pound of cotton, worth perhaps ten cents, may be taken and manufactured by foreign labor, and again returned in the form of fine laces, of the value of one thousand dollars. Iron is capable of the greatest elaboration, and of the highest value, from labor, of any other article; the mechanical skill and labor expended upon it totally overshadow the original price of the raw material. Take a quantity of cast iron, worth £1 sterling, and attach its money value when converted into finished articles:—Bar iron, worth £1 sterling, is worth, when worked into horse shoes, £2.10s; knives, (table) £36; needles, £71; pen knife blades, £657; polished buttons and buckles, £897; balance springs, of watches, £50,000, ($242,500,); Cast iron worth £1 sterling, is worth when converted into ordinary machinery, £4; large ornamental work, £45; buckles and Berlin work, £660; neck chains, &c., £1,386; shirt buttons, £5,986, ($29,031). These facts demonstrate the wide difference in the value, between the raw material and the manufactured articles. The cause and the effect of the balances of trade against us are thus made apparent. Mark the difference! If the same *fabric* is produced at home, you have no debt, and our labor is employed; if obtained by excess of foreign importation, the balance of the debt is to be paid in coin, and our labor is unoccupied. This country was colonized and settled with a view to such a free trade. The war of Independence averted its doom; while the theory of British free trade, yet held by the Planting States, has induced opposition to manufactures and internal improvements, and has occasioned a steady annual balance of trade against our country; and creates an increase of our national debt, of from thirty to fifty millions a year, according to the amount of imports. There must be *countervailing* regulations, until a fair and equal trade can be obtained, and our manufactures permanently established. England, before her manufactures were well established, made it a criminal offence, by her laws, to *export the raw material*. Fines, forfeitures of estate, imprisonment, whipping, standing in the pillory, cutting off the right hand to be nailed up in the market place; and in case of a second offence, to be hung and drawn and quartered, were then the mild penalties for the *protection* of English *free trade*. May we not learn from her example, and copy her laws, so far as to withhold our cotton, manufacture it among ourselves, and export only the *fabrics* to a wide world of willing consumers? The gold of California is a trifling item of public wealth, compared with the unspeakable value of power of indefinite production of cotton, peculiar to our Southern country.

Nothing will bind us so much or so closely together as protection to the industry of all sections of the country. With Agriculture and Manufactures encouraged,—with Commerce protected,—with our supplies produced by our domestic labor,—and with one Legislation, Union follows and becomes necessary to our interests and our strength, and we cannot but attain to a prosperous condition. It is (need I repeat it?) the unity of interests and the common pride that each man feels in his country, that keeps us together. It should be remembered that, shoulder to shoulder, on the field of battle, we achieved the independence of our country. The battle of Buena Vista, is alike the glory of us all.

The occasion forbids me to gratify myself in going through details of facts, or to prove how much has been done by the American Institute to foster and promote Agriculture, Commerce, Manufactures and the Arts, encourage the genius of our country, and maintain the employment and dignity of labor.

Have you not heard of the wonderful perfection to which the manufacture of glass has arrived among us. The Bohemian colored glass has been carried to a point of perfection here which has already rivaled that country, in which it was first manufactured. The discovery of this is complete in our country. The specimen which is now exhibited was manufactured in the city of Brooklyn. American skill, and American industry and ingenuity, have accomplished this much, and we challenge Bohemia now to surpass us in this respect. Here is more that was manufactured in Brooklyn; and the result is that at Brooklyn, Wheeling and Pittsburgh, and a number of other places, the glass manufacture of our country is entirely and unprecedentedly successful. Strangers have thought there is less glass shown this year than usual. The reason of this is, that we could not afford room for the specimens without excluding other articles which were equally deserving of a place. It compelled us to present only a selection.

Here are the premium and other pieces of broadcloth, which the manufacturers have sent for exhibition, all of a high quality; allow me to say that I have bespoken a suit of it. Here are also some very fine Muslin de Laines, which will be more prized when it is known that they are the production of our own material and manufacture. Our country, which has been burthened with the importation of foreign Shawls, is now teeming with abundance from our own manufactures. The shawls imported from France and England, but particularly from France, have been the great wonder on account of the perfection to which they have been brought. They have carried out of our country twelve millions of dollars. I hold in my hands one of the shawls made in the Bay State Mills, in Massachusetts, which employ 2,500 men, and which manufacture 2,800 square, or 1,400 long shawls per day. Each of these is now sold at half the price formerly paid. The product of these mills this year is one and a half millions, and this domestic production saves that amount in debt for the importation of foreign shawls. Here are other specimens from the Watervliet Mills, Skaneateles, and other factories. I can only allude to the single circumstance that we are manufacturing these articles extensively, and by this means we have stopped the importation.*

Here is linen thread, made in your own country, which until a recent date we were compelled to import. The American Institute, three or four years ago, offered the gold medal for a specimen of linen manufactured in this country; but no answer was made until last year, when the premium was taken for the first time.

There is also here, I may mention, a fine specimen of woollen yarn, which has been made by American machinery. I feel in every stage of this experience a heartfelt joy that we now have ceased to look abroad for our supplies. We have the ability at

* It requires 3500 sheep to be kept a whole year to support the Lawrence, Mass., Mills with wool for one single day. They produce 1500 shawls per day, and consume Cochineal to the value of $60,000 per annum. Three years since there were not 500 inhabitants in Lawrence, and now there are 10,000.

home to manufacture every article that we require for our own consumption. But before I go any farther, I cannot refrain from asking you to look at the legislation of Congress in 1846; its mistaken policy and the cruel results. It has caused the total ruin of thousands and tens of thousands of the most useful men in the country. It tends to the utter destruction of the coal and the iron, the cotton and woolen interests. The act of Congress of that date provided a tariff on the raw materials, higher than on the imported manufactured articles, which had the effect of materially injuring our manufactures and depressing domestic labor. I hope that the next Congress will wipe from its statute-book that law, which was so injurious in its effects.

We have been trying for several years to make our own cutlery. Here are specimens which are considered better than those imported. Our country has gone on in a great career of prosperity; but the unfortunate system of putting a tax upon the raw material has ruined capital and worked injuriously upon the manufacturers. It has left us this year under a debt of fifty millions, being the balance of trade against us, for imported article from Europe. It is time that our interests and our labor were cherished with reasonable and fair protection.

Let it not be supposed that any articles not mentioned are purposely omitted. We would notice all kindly, for we feel that all have contributed alike to raise our country to a prominent position among the nations of the earth. Time forbids.

Walk into the machine-room, and after inspecting it, I am sure you will say there is not its equal to be found The same science which is there concentrated and exhibited cannot be surpassed. There is Griffin's improved Furnace-fire for the steam boiler, and a place has been prepared to exhibit the machinery, which works with wonderful precision and order. That shaft and that engine run as steady as a patent lever watch, disturb nobody in the action, and the amount of fuel that has been saved, is about one-third that was formerly consumed. It is also calculated as a heater for separate buildings, and is particularly adapted to public edifices and for drying rooms.

In strong contrast with the skill and mechanical ingenuity of the present day, here is an old pod-auger and bit, over one hundred years old. It serves to show you what changes have been made, and how much you should feel on witnessing an exhibition of the machinery of this Fair and the facilities with which labor is furnished. There is a screw-auger in yonder machine shop that moves with the velocity of lightning. With chisels placed by its side, it bores square holes and mortises in timber with wonderful accuracy and rapidity. Go farther and view the operations of that planing machine. He whose energies were formerly exerted in planing boards from day to day, to furnish even then a scanty supply, is now relieved from his slavish toil. The rough timbers are now by steam power made smooth in an incredibly short space of time, and the laborer is allowed a little leisure to improve his mind and fit himself for other occupations. We have boasted much of Blanchard's invention of the turning-lathe, for unequal surfaces, and forming gun-stocks, shoe lasts, &c., but there is Cochran's circular saw-mill, which will saw timber on a line, or with every crook and angle required in ship-building, with ease and accuracy. Come some distance further, and you will see there various machines at work. You will there find the planing machine alluded to, with an extraordinary power, capable of turning out a vast quantity daily, and performing the labor of many men. So, too, this other is Gould's machine to plane iron. But see Dick's Anti-Friction Press, breaks bars of wrought iron like pine sticks. It cuts into form cold iron rolled into sheets half an inch thick, for steam boilers, and punches the holes for the rivets with the apparent ease of a tailor with his shears and bodkin, forming a garment from his cloth. It shows the economy of space and expense, and illustrates the mighty power of steam, directed by the intelligence of man. Among these wonders is the rope-making machine, of Slaughter and Perry, from Virginia, the whole not above the size of a bale of cotton. Have you not seen the toil of making the various ropes, from the cable to the smaller cordage, with the long and inconvenient rope walks. There is the machine that takes in the hemp, flax, or cotton, at the hopper; ropes the thread, and twists them with speed; while another wheel follows, laying the rope complete. If you want a halter for your horse, or for a villain's neck, it turns it out complete in less time than I take in giving you this explanation. The expense of making one-inch cordage, is one cent per pound.

Here are new improvements on the grist-mill, grinding grain with great speed and perfection, reduced to a small space in size and with a great saving of labor and expense.

Yonder is a machine called a magnetic engine—a new application of the power of electricity, which you all know Franklin first drew from the clouds, and showed its properties by the investigations of his own great and inquiring mind. I remember sitting in company with men who laughed at what was termed the folly of Fulton, who attempted steam navigation. Where is not the triumph of our country complete in the success of his invention? Perhaps such fortune awaits this discovery. It proposes to work by a galvanic battery, and by its magnetic power to serve in the place of steam, with an economy of space and labor, making a saving of nearly one-half. It is yet incomplete; it merits scrutiny.

There is Bishop's improved carding-engine, for wool and cotton. It claims and appears to be a great improvement, requiring one-third less power and one quarter less space in the factory, and with other points of economy.

There is Eastman's improved Throstle frame for spinning cotton. It dispenses with the drum and bands—and gives motion to the spindle with increased ease and economy in space, and with one-half the cost.

Here let me show you a valuable plan for the ventilation of ships—it is in the nature of a self-acting pump, like an inverted syphon or an ox bow, to draw out the fœtid air from the hold of the ship. Valuable when we consider how many of the poor immigrants die with ship-fever from bad ventilation on board our vessels.

This cast iron wheel, which is an object of no small importance to railroad companies, is well deserving of attention. This specimen, the centre of which is of cast-iron, and with a wrought-iron rim, claims to be a great improvement, in addition to lessened cost. Those now imported cost $50; while these are afforded at $13.

Again, we have the pleasure to inform you that after years of trial to dispense with charcoal in the making of wrought-iron, we have now arrived at the means whereby we may entirely dispense with it, by the use of anthracite coal. This is a great saving to the country, and we may look forward to the day when our forests will be used for other purposes than such fuel.

You have doubtless seen the small kegs made in the machine-room. The machine which turns them out is also calculated to make barrels with great perfection of manufacture, the like of which are no where to be found. Europe stands astonished at the tightness and beauty of American barrels.

There is on exhibition here from the state of New-Hampshire, an improved stone-cutting machine, which does the labor of forty men per day. A machine was brought forward and proposed to be used in England, till the sovereign people of that county decided that it should not be used there to deprive them of their labor. We have no such fears here.

Here is also Cincinnati wine made from the Catawba grape; and from the skill of the managers, whose experience makes no blunders in such matters, it has been pronounced good—so now we can be joyful when it pleases us to be so, on domestic produce.

The carpets made here and placed on exhibition are equal to any hitherto imported, so that we can now furnish our houses without going abroad for any of the articles required. And I should not forget to state that the shawls before you, to which I have before referred, are dyed with American dyes, and are now prepared to stand the test of experiment.

I thank you for your attention and patience so far; and in place of recapitulating more of these articles, I will only say that in yonder machine-shop there is a vast concentration of science, which is the offspring of men who are self-educated.

This machinery is calculated to work with great economy. We think the machinery now introduced here saves more labor than any hitherto on exhibition; and should be estimated of the value of many millions to our country.

The Cattle Show which has just been held at Madison Cottage, being a part of our annual exhibition, we are happy to say, has by far exceeded any of its predecessors. The total number of entries was 304, composed of stock of pure breed, native, and grade, of which there were superior specimens; fat cattle, horses, sheep, swine, and poultry, all good and in great variety. The Ploughing, Spading Match, and Testing of Ploughs, took place as had been previously announced in the programme, at Tarry-town; they were numerously attended, and the result highly satisfactory.

This day has been nearly spent in reading the award of premiums. It is the duty of the American Institute to pronounce its judgment upon the various articles entitled to premiums, and confirm at discretion, the reports of the committees. The premiums that have been awarded are as follows:

92 Gold Medals.
85 Silver Cups.
327 Silver Medals.
510 Diplomas.
136 volumes of Agricultural Books.
$132 and 27 Certificates (apprentices' or minors' premiums.)
$30 and 4 Bronze Medals (Van Schaick premiums on silk.)
$320 Cash premiums.

With this brief statement we now return our thanks to you for your support and patronage; and adjourn until the first Monday in October of the next year.

The president then invited the auditory to continue their examination of the articles on exhibition, or to withdraw from the Castle to the Battery, where a Pyrotechnic exhibition would soon take place.

PROCEEDINGS OF THE FARMERS' CLUB.

AGRICULTURAL SCHOOLS.

American Institute,
New-York, Nov. 19, 1850.

Mr. Tyler Fountain, of Peekskill, in the chair.

H. Meigs, Secretary.

The secretary read the following translation by him, relative to Agricultural Schools, and the large trees of Tasmania.

Among the twenty-one volumes presented by the minister of Agriculture and Commerce of France (by the hands of Alexandre Vattemare) to the American Institute, there is one of distinguished value. "German Agriculture, her Schools, their organization and manners, and most recent practical operations, published by order of the minister of agriculture and commerce. By Royer, National Press. Paris, 1847." Large Octavo. Pages 541, with plates.

This valuable work, which enables us to understand the actual working of modern agricultural schools there, is worthy our full consideration.

The general diffusion of *Primary Instruction* in Germany, caused at an early day, an opinion of the necessity of a special system of instruction favorable to the progress of agriculture, the first and most important of all the industrial pursuits of the country. Numerous attempts have been made with reference to this object, and experience has already modified very much the plan originally adopted for the organization and direction of agricultural schools. The study of these attempts and their results, may be useful to those who are now desirous to enter this inviting field of operation. But we believe that the information we have to give is essentially of a negative character, and that the problem is far from being resolved by even the most perfect of the existing establishments.

If we are not deceived, an error in principle has presided, up to this day, in the formation of agricultural schools we have not sufficiently comprehended (perhaps) how few rules of this complex science are of general application. We have too easily admitted the possibility of finding professors perfectly instructed and scholars properly prepared to profit by their teaching—and above all we have much exaggerated the influence which scholars from agricultural schools can exercise over the general progress of agriculture.

As to the professors, it cannot be dissembled that unless they have long directed personally the working of farms of some importance, they cannot have more knowledge of agriculture than that which is analytical and very imperfect.

In an industry like this, so complex, the instruments and products of which are of such a solid nature, the professor ought always to embrace the whole of it while he is treating of its details. He alone who has long learned cultivation can arrive at any hypothesis. Such men are very rare in every country and they are hardly ever to be obtained for schools. The working farmer requires a considerable capital. A well informed one—an owner of the soil who consecrates his activity, intelligence and fortune to it and finds in it an independence, will not renounce it to occupy an agricultural professorship, or undertake to oversee an agricultural school.

And that the scholars of such schools may be usefully prepared for the teaching which they may receive, a great number of conditions are necessary and difficult to be found together.

The foundation, by the illustrious Thäer, of the school of Mœglin, in 1806, appears to be the first attempt made in Germany, in favor of agricultural instruction.

Mœglin was at first a private school like that of Roville in France, worked out by Thäer on his private account. The all powerful word of such an able master as he was, and a sort of agricultural revolution, favored by the introduction of Merino sheep into northern Europe, gave his establishment a great reputation and fixed the attention of governments. In 1819, thirteen years after its foundation, the agricultural school of Mœglin was adopted by the State as a *Royal Academy*, the working of it to be at the will of the proprietors, the son and the son-in-law of Von

Thaer, and the cost of instruction to be paid by the government. Under this system it was soon found that the working part of it was for the benefit of proprietors who did not go on to try experiments but worked for profit. The business of teaching soon fell off and the reputation of the experimental farm of Mœglin hardly survived its founder, Von Thäer.

The superior agricultural schools of Prussia, more recently founded, are on a similar plan. Schwert understood the vicious character of it, and in his fine agricultural institute at Hohenheim, in 1818, altered the plan. Hohenheim school, placed on public domain and worked at the expense of the public treasury, soon rose above the mixed schools of Prussia, which hitherto prevailed. Without being precisely experimental, the work of the farm became eminently progressive, and notwithstanding the very injurious and too frequent changes of its Director—agricultural instruction there received developments before unknown. The product of the farm was about 1000 francs ($200.) It is now the most perfect school of the kind in all Germany. That of Schleisheim in Bavaria, founded in 1822, and that of Tharan, of Saxony founded in 1830, are evidently chalked out of this great model of Hohenheim.

It was also reserved for Wurtemburg to experiment like Hohenheim, on the creation of working schools for farmers. The organization of like schools at Ellwangen, and at Ochsenhausen in 1842, was a new step in the way of agricultural training.

With the exception of some schools specially consecrated to the study of some particular branch of farming, or of gardening, in Prussia, and elsewhere too, the teaching in the German school was, in reality, more theoretical than practical. Exclusively accessible to families rich enough to pay for the board and instruction of their sons for several years, a matter impossible to the working men of the land. This created two obstacles.

First—The spirit of caste, which in German manners separates absolutely the different classes of society.

Secondly—The very nature of teaching, suitable to laborers. This last reason is so powerful, that throughout Germany, as well as France, the landed proprietors have the strongest repugnance to the employment of (Regisseurs) managers of their farms coming as scholars from the best agricultural institutes! The very superior school of Hohenheim itself forms no exception in this respect, and the young men from the gymnasiums who have never studied agriculture at all, are preferred as overseers or managers. In every pursuit the perfection of the process is the indispensable thing, and that is not acquired except by long and incessant practice.

Sometimes an able workman rises to the condition of a good engineer, but a very small number of good engineers are good workmen. This is far more true in agriculture than in any manufacture, because the work is less divided, more various, more difficult, and above all, more painful. The working farmer, accustomed to the fatigue and hard necessity of his labor, cannot study; the agricultural engineering scholar (if I may so express myself to make my thought better understood) has too many things to learn to be able to practice.

In the raising of any product the taste of the consumer is to be gratified, and this necessity extends to intellectual as well as to material products. Besides, the German and French farmers generally prefer managers (Regisneurs), who are practical, and come from the working schools, (although of less knowledge) to the more learned from the Institutes. As to the farmers generally, they think it derogatory to their sons to *take charge of a farm school after coming out of college.*

A different system has been adopted in some schools. Mr. Schultz, Ex-Director of the Agricultural Academy of the Eldena, had founded between 1826 and 1834, and had re-opened in 1839 a sort of Theoretical Agricultural College, without any farm work at all. Collections, Museums, and the Administrative Sciences alone, are taught to about fifty scholars. The College has had few imitators. Such is the divided opinion as to Agricultural teaching in Wurtemburg which of all Germany is most advanced in the way of Agricultural progress and instruction. For the land owners and great farmers, a solitary superior school like the Royal Institute of Hohenheim is enough. There they may gather the flowers or go to the bottom of Agricultural knowledge.

But that we may not deceive ourselves—all the means of school instruction, when compared with the population is but as *one drop of water in the Ocean.*

It is evident that the economical constitution of farm property is, at this moment, undergoing a radical revolution throughout all Germany. That the obligatory division of lands, redemption of territorial unions, institutions of credit, use of paper money, general instruction and enfranchisement of the people are silently but completely preparing a great future for German nationality.

Laborious men who become intelligent and remain sober, generous, and modest, secure to their country and to their agriculture incontestible superiority.

Hohenheim is composed of three district schools, united in one establishment under the common direction of Mr. de Weckherlin.

1st. The Forest school.

2d. The Agronomic or School of Agriculture for young rich persons. To this we give the name of Institute, to distinguish it from the 3d. The School of Practical Agriculture for peasants.

The grounds, meadows, plantations, gardens and nurseries, forming the dependance of a beautiful Royal Chateau. The national forests and extensive annual excursions, particularly serve to instruct the Forest Scholars. This School, in 1844, had but twenty-six scholars, who board at their own expense at Hohenheim, and are under the surveillance of the direction. Wurtemburgers, pay 60 florins a year for lodging and instructions—while others, strangers, pay one hundred and eighty. The Forest School was founded in 1820, and the whole number which had been there up to 1842, was only 313.

The Agricultural Institute is organized on very wide and grand bases, and everything which strikes the eye in the fine establishment of Hohenheim, tends to make us believe that it is the principal and most important object; however when we go to the bottom of it, and discover the reality, we find that in point of fact it only occupies the third rank, very far behind the School of Practical Agriculture.

We think that France has nothing to envy in this School to-day—that she possesses schools now, conceived in views more in harmony with the wants of the country.

The director of Hohenheim has a salary of 2,200 florins, equal to $946 per annum. The minister of the interior of Wurtemburg receives but 6,000 florins a year.

Scholars are not admitted at Hohenheim under sixteen years of age, and after a severe examination requiring them to read, write and cypher perfectly—(a knowledge possessed by every peasant in all Wurtemburg,) and beside they must know how to plough, harrow, &c. The term is ended in three years. Here is a fine library of agriculture at the disposal of the scholars. A great number of newspapers and journals, of a special character, are laid on the round table as soon as they arrive—all the scholars use them at their pleasure.

The Museum of implements and machines, arranged and numbered in the order of their utility, is perhaps the most complete in truly useful things of any in Europe. The printed catalogue of them contains 667—and it is given gratis to the visitors. In the machine shops any implement or machine, either in model or of full size, is made to order for moderate prices.

In Saxony we remark, that primary instruction is in the country, as well as in the towns and cities, *general and perfect.* The peasants have a peculiar character. Their stature is taller, figure better, features more regular, and their costume more graceful. The countenance open and free, much more so than in Wurtemburg, and especially in Bavaria. They have none of that apparent timidity, nor that politeness which the Wurtemburgers have, who believe it to be their duty to salute every Burgher they meet with, and never fail to do it.

The Saxon peasant, without any other penalty over him, except public reprobation, never utters an oath or uses indecent language even in the beer shop.

Music.—They love the *Valse*, and walks under their magnificent rows of trees.

(Our ancestors could hardly have been any better than our modern brother Saxon.)

MEIGS.

The rich Saxon proprietors do not believe that Greek, Latin and German literature, with some notions of law and the study of all those ridiculous things, called among us, good manners, are sufficient for the education of a man of the world.

Revue Horticole, Paris.

Immense Trees.—I translate the following: "The Baobab of Senegal—(Adansonia digitata.) The Bald cypress of Oaxaca (Taxodium distichum), and the famous chestnut of Etna, have been often cited as the giants of the vegetable kingdom. But these sovereigns are dethroned and put into the second rank by those lately discovered in Tasmania, which leave far behind them those antique monuments of nature. Last week I went to see the two largest trees existing in the world. Both of them are on the borders of a small stream tributary to the river of North Bay, in the rear of Mount Wellington. They are of the species named there Swamp Gum, I and my companions (five of us) measured them. One of them had fallen, we therefore easily obtained its dimensions. We found its body 220 feet from the ground to the first branch. The top had broken off and partly decayed, but we ascertained the entire height of the tree to have been certainly 300 feet. We found the *diameter* of the base of it to be 30 feet, and at the first branch 12 feet. Its weight was estimated to be about 440 tons. The other tree now growing without the least sign of decay, resembles an immense tower rising among the humble sassafras trees, although they are very large in fact. The Gum tree at 3 feet above the ground measured 102 feet in circumference, and at the surface of the ground 150 feet in circumference. In the space of a square mile I think there were not less than 100 of these trees, none less than 40 feet in circumference. It must require several thousand years to produce the largest one.

H. MEIGS,
Secretary of the Farmers' Club.

Charles Henry Hall.—I am pleased with the translations just read; we are very courteous to strangers. The boasting French and Germans have not succeeded in their Agricultural Schools. We boast much of our modern improvements, but our American forefathers established and maintained excellent schools in which the dead as well as the living languages were taught; and they were capital farmers and gardeners and in the most important points in agriculture, they were ahead of Old England for a long time. They practised the drilling system which had become neglected in England, and their gardens were superior. When the war of the revolution occurred, agriculture fell off. When Cromwell ruled and had Milton in his cabinet, they encouraged agriculture and the arts—they were great men. Cromwell placed the great Cartoons of Raphael in London. In 1840 England was not ahead of us in general agriculture, but she was in gardening. Now she is ahead in both, but we have not to go to France or to Germany to learn much.

In 1792, there were good agricultural societies in Connecticut, and they continue to this day. I think that Pennsylvania was before that with her societies.

In 1819, there were cattle shows in Massachusetts and Connecticut, superior to those of the American Institute. In 1820, De Witt Clinton prevailed on the Legislature to give to each county as much money as it should raise for an Agricultural Society. At the cattle show of Vernon, there were one hundred as fine blood horses as I ever saw; there was the famous Eclipse, and there was Barclay's horse, which was sold for eight thousand dollars—there were many of the finest hogs, sheep, &c. The first premium given on horses, was $50. At the first cattle show of this Institute, there were first rate cattle and they were paraded through the streets.

We applied to the Legislature recently for an Agricultural College, but in vain. Fleischman has taught us much on the subject of wool. As to our college, we had contracted with Mr. Morris for about 200 acres of land—opposition was felt to the project, in the Institute as well as out of it. It fell. If we had obtained it it would now be worth to us as land, a large fortune. Dixon H. Lewis told us that if we should establish a college, he would send three sons to it.

Alanson Nash.—The premiums we give are too low; we ought to give $100 on best farm, and there should be *ten farms* in competition, at least. We should address circulars to able men in reference to our various branches, especially the agricultural. The study of our soils must be gone into. One of our Professors states, truly, that there is always more or less difference in the soils of lots of ground and in farms. All cultivators are deeply interested to know what their soils are best adapted to produce. And such vegetables as we introduce from other countries demand particular locations and care. Man himself *requires acclimation when he removes from one condition to another.* Animals generally lose caste when imported. I think that we should import males to breed from our native stock. So change of condition affects plants—our imported grape vines all fail.

One good observer of cattle, says that he never elsewhere saw a pair of cattle as good as he saw on the granite hills of New-England. We must make up our minds that *home is best after all.* As to our Agricultural College, we have lost that, but we have found a goodly house for our Institute to transact its business in.

Charles Henry Hall.—The imported horses I think, rather alter than degenerate. The Englishman becomes taller here in some generations, but little things are often best. The Merino sheep does not degenerate here, he is as healthy here as I have seen him in his native Spain. Those from France and Saxony are so too, and more healthy than at home. In England they have a new horse from mixture of foreign blood—but they are compelled to bring in the horse from the South full of that Southern etherial fire. The blood horse puts fat upon his muscles. I imported a mare from Lord Grosvenor's stud; her mane and tail were like those of the northern horse. I bred out of her the celebrated Black Maria and Shark. Maria 16 hands high, was never beaten in the race. The pure Arabian horse is from $14\frac{1}{2}$ hands to 16 hands high.

The chairman exhibited drawings of his farm with the white pine trees flourishing on it.

Mr. Carter moved that we adopt the 58th rule of the American Institute by-laws, viz: "No member shall speak more than twice upon one question at the same meeting, nor more than ten minutes at a time, unless by leave of the meeting." Carried.

The Club adopted the *pine tree and its culture* as the exclusive subject for next meeting.

Ordered that these proceedings be printed in the newspaper, the Artisan. Carried.

The Club adjourned to 1st Tuesday of December, 1850.

H. MEIGS, *Sec'y.*

AMERICAN INSTITUTE,
Farmers' Club, Dec. 3, 1850.

Judge VAN WYCK in the chair.

HENRY MEIGS, Secretary.

The Secretary read the following article, prepared by him, as an introduction to the discussion on the pine tree and its cultivation:

The *Pine tree*, especially the white pine, is one of the most important and of almost universal utility in building; we do not know any wood which is equal to it for the same purposes. Our population is increasing with such vast rapidity that, in another quarter of a century, there will be as many new buildings erected as have been built during the last two hundred years. The demand for white pine will be therefore immense. While all hands are busy mowing down (as it were) our white pine forests, no one hardly ever plants a new pine tree!

This noble tree is of the order of Pinaceæ. All the species are Conifers. They are natives of various parts of the world, from perpetual snow to the hottest parts of the Indian Archipelago. The order includes the juniper, larch, cedar, deal, fir, spruce, cypress, &c. The stone pine, and the pinus halepensis, are much used by the Greeks in ship building. The gates of the city of Constantinople, celebrated for having lasted from the time of Constantine to that of Pope Eugene IV, *i. e.* 1100 years, were made of cypress. Of the Juniperus oxycedrus the Greeks sometimes carved the images of the gods. Another of the Pinaceæ, the Deodar of India, the wood is nearly imperishable. The Norfolk Island pine is an immense tree; botanists call it *Eutassa* (*Araucaria*) *excelsa*. The Huron pine of Tasmania is called *Microcachrys tetragona*. The species in New Zealand, Dammara-Australis, called by the natives Kawrie, attains the height of two hundred feet; it is an invaluable, light, compact wood, free from knots, and the finest masts in the British navy are now being made from it. The pines of Northwestern America exceed these. The stupendous *Pinus Lambertiana* attains two hundred and thirty feet, and so does Abies Douglassi. The Abies is the best timber.

The White pine of our State is found in large forests in some places.

1st. On the head waters of the Hudson, and on the rivers emptying into the river St. Lawrence.

2d. On the Salmon and Black rivers which empty into Lake Ontario.

3d. On the head waters of the Delaware and Susquehannah.

4th. On those of the Allegany and Genesee. All these forests are rapidly disappearing before the axe, and it is believed will disappear in about twenty years from this time, (1850). The timber of 130,000 acres is consumed now in one year.

The fine experiment tried by Tyler Fountain, of Peekskill, in growing this noble tree with perfect success should stimulate all farmers to plant pines along their northerly borders.

R. L. Pell, of Pellham.—Our steamboat men, a few years ago, thought that nothing but pine wood could be used for fuel in their boats. They said that coal could not, because it so soon destroyed the iron bars of the furnace. But, as ocean steamers could not even carry wood enough, they were compelled to try coal—and it is supposed, that unless the steamers had taken to coal, the pine forest would, by this time, have been consumed. The pine tree should be planted in such situations as are suitable for its proper growth. The pine soils are also excellent for the cereals. The pine barrens near Albany are examples of it. The late judge Buel, burned pines on a portion of these barrens, and sowed wheat as well as all sorts of vegetables, and obtained good crops. I am of opinion that the excrementitious matter thrown off by one kind of tree or vegetable, is a good enricher for those of a different kind. If a young apple tree be put in the place where an old one grew, it dies. So of the peach. Thence we learn the importance of a succession of crops. The cereals are subject to this law—so that they will not prosper unless the soil be suitably amended.

Lewis G. Morris, of Morrisania,—Believes that the pine tree exhausts the land—that the fall of its leaf adds very little fertility to its soil. Judge Buel did raise fine crops on the Albany pine barrens by scientific management with clover, with plaster, and with skill and energy. The pine tree grows best in kind soil, on land comparatively of but little value. So on the pine grounds of Long Island. I have recently remarked the immense masses of pine lumber heaped all along the shores of our Hudson river, intimating distinctly the great consumption of pine trees, and the necessity of providing for a new race. About eighteen years ago, I planted some white pine on my place. They are flourishing, and their bodies are already as large as mine.

Mr. Meigs—Observed that in our southern piny regions through which almost periodically tornadoes from the south-west have torn up the pines, the path is discovered by the uniform size of the new pines grown up since that tornado, and occasionally I found oaks had taken the place of pines in the tornado paths. The growth of pines in these paths is so extensively uniform, that they may be compared to the teeth of a hatchel. In some of these paths the trees are several hundreds of years old.

Mr. Morris.—There is no difficulty in obtaining any number of young pine trees.

Mr. Bell had observed the young plants growing in some one direction from the parent tree, indicating that the seeds had fallen thus to leeward in a blow. The young plants are quite vigorous, and are easily transplanted.

Martin E. Thompson.—They are quite sure in the transplanting. It is best done in September, but will do at any time of the year. I have observed yellow pine trees in New Jersey, all young, not more than forty years old as big as my body, and I am full sized.

Thomas Bell, of Morrisania.—Many years ago I was cultivating tobacco in Fairfax county, Virgina, and I found that in three successive crops the soil was no longer worth anything; and that in most of the worn out tobacco lands left to their own fate, a growth of pine trees covered the soil; and that in some twenty years, these pines were often cut down and burned on the soil. After which tobacco was again planted for another series of three years. And on such renewed pine soil I have raised the richest Virginia tobacco. These crops were on light soil, much of which exists in Maryland and in Virginia.

Mr. Blakeslee, of Watertown, Conn.—Two white pines were cut down for their bright turpentine; within twenty years after they were so cut down a new growth of beautiful white pines made their appearance, and now they are nearly as thick as my body; these must have come from the seeds of the two parent trees. On another field cleared up twenty-five years ago a growth of red cedars succeeded; these are now as large as my arm.

Judge Van Wyck.—I do not believe that there is any tree growing which is more useful and more beautiful than our white pine. Its excellent properties for our houses and ships, and our yellow pine for its timber, tar and turpentine, every species of it more or less pitchy, and all these are good for our commerce and can find sale in almost every part of the world. It is our duty to continue their growth. Pines grow in almost all climates and localities. One alone appears to prefer swampy land, that is the cypress, which yields excellent knees for ships, and one species of it makes the best of shingles. The Larch belongs to the same family, and has been well cultivated in Scotland. Nearly one hundred years ago a nobleman planted in the Highlands about *one million of Larches*; these grew well there. It is much used in ship building, and is found to be more durable, or as much so, as the Oak. I have visited the fine farm of Tyler Fountain, at Peekskill, where he has an avenue of white pines of luxuriant growth. I understand that they grow best in lands composed of upper soil, sandy loam, with a sub-soil of clay; such is in a measure the soil at Mr. Fountain's place.

Mr. Pell moved to continue the subject at the next meeting.

Mr. Blakeslee proposed that the Club should discuss the subject of *breeding Horses* and *Devon Cattle* on the first Tuesday of March next.

Alanson Nash, of New York, communicated to the Club the following statement from Vincent J. Williams, of Ohio, which was read:

To the Farmers' Club of the American Institute:

Gentlemen—I herewith enclose to you a statement of the Cattle trade as carried on by Mr. Williams, and others, at South Bloomfield, in the State of Ohio.

Mr. Williams is a gentleman, extensively engaged in business, and is an experienced drover; he is a friend to the American Institute, and fully enters into its views and designs in regard to agriculture and its kindred branches.

I have the Honor to be your ob't servant,

A. NASH, 26 Beekman st.

New-York, December 2, 1850.

Statement of Vincent J. Williams, Drover, from Ohio.

Mr. Williams resides at South Bloomfield, Pickaway county, Ohio, about 17 miles south of Columbus; is a farmer by occupation, follows driving cattle occasionally; has been in the business of a drover more or less about 14 years past. He has taken droves of cattle to Baltimore, to Philadelphia, but principally to the *New York market*; indeed New York is the principal market for the western country in the cattle trade.

In the cattle *trade* there are *no less than five classes of persons* who do business.

1st. The raiser or breeder of stock to sell to purchasers.

2d. The collectors and purchasers of young cattle from six months to one year and a half old to be kept after for one year.

3d. The collectors and purchasers of cattle from one year to two and three years old. These are to be kept for grazing and fed on hay.

4th. The fourth class are those who purchase to feed and to drive for market; and fifth, the butchers.

The last cattle are usually purchased and then fed from four to six months. The method of feeding is as follows: we generally commence feeding from the 15th of October to the 1st of Nevember, and continue from four to six months following; we begin moderately with corn stalks and ears cut up from the hill.

The cattle are usually put into an adjacent pasture near the corn field, which often contains from 150 to 500 acres of standing corn planted and grown the same season.

Our corn is the *white gourd seed* variety; this is preferred because it is softer and more easily digested. Our seed is chiefly obtained from the State of Kentucky.

When we get our seed from Tennessee, and farther south, the crop will not ripen the first year.

In the month of September we cut up our corn with a large corn cutter, the whole hills, including stalks, blades, and husks, are cut down, and 140 hills of the corn thus cut down are set up in a stack in the field, and so on till the whole field is cut and stacked.

Our droves of cattle for feeding are divided in parcels or lots of about 100 head of cattle each and kept in *separate enclosures.*

To feed 100 head of cattle we begin by taking from the field of stocked corn, for half feeding our cattle as it is called, 8 stocks of corn a day for each, four in the morning and four in the evening.

These 8 stocks are supposed to contain about twenty-five bushels of shelled corn.

This method is continued for about two weeks, but increased daily until we can put the cattle on full feed.

At the end of two or three weeks we give the 100 head of cattle sixteen stocks of corn each daily; 8 in the morning, and 8 in the evening; this is supposed to yield about fifty bushels of shelled corn, which is fed out daily to the 100 head of cattle.

Our fields enclosing the cattle do not contain any sheds; the cattle run at large in all weathers.

We have a wagon built with a large rack or crib placed on four low wheels; the rack is about 22 feet long; the wagon is driven in the corn field and loaded, and thence to the feeding grounds, which are in the winter mostly brush or wood lands to protect from storms. One man heaves out on to the ground the stalks and corn altogether for each feeding as the wagon passes round the feeding ground; two or three cattle will often mess together.

The cattle are turned into the feeding ground about sun rise, and remain until 2 P. M., and then passed out into a vacant lot. About 12 noon, the drove of hogs are let into the feeding ground which the cattle have occupied and been fed upon.

These hogs number from 150 to 200. That is a lot on which 100 head of cattle are fed, will furnish food sufficient to keep 150 large, or 200 small hogs. The hogs will eat up all the corn which is left on the ear or scattered by the cattle trampling on it, and also the litter which passes from the cattle. This contains a portion of the corn imperfectly digested.

Indeed, the hogs will eat up the litter of cattle thus fed clean, after the hogs have remained on the feeding grounds some three hours.

The cattle are then driven into another lot to feed for the evening.

We give the hogs no other feed than what they pick up on the feeding grounds.

They will improve in this way from 100 to 150 pounds each; during the time of feeding, say from 4 to 6 months. We feed our cattle no meal, but I am certain that the feeding on meal is the most economical. The drovers and feeders generally are of opinion that cattle will get as fat on one-half to two-thirds of the quantity of food when ground into meal, as they now do, fed on corn stalks and the ears of corn; but cattle must be loose when fed on meal, and will not drive as well. They fall away more by driving, and will not travel well.

Cattle being ready for market, I drive by land; in droves of 100 to 110 in each drove.

The method of feeding on the road to market, is much the same as on the feeding grounds; some drovers feed twice a day; but a majority feed only once a day, at evening. While on the road we drive slow at the first sitting out, not to exceed 8 miles a day if the excess can be avoided, and we increase to 15 miles a day as occasion may require; from 10 to 12 miles a day is as far as a drove will do well; but even at this rate cattle will shrink in their weight 100 pounds each, in coming from my feeding grounds at S. Bloomfield, to the New-York market.

My usual route is from South Bloomfield; first to Zanesville, crossing the Ohio at Elizabethtown, Virginia; thence to Bedford, Pennsylvania; thence to Harrisburgh; and thence to Easton and Morristown, and to Hoboken. But one-half of the Ohio cattle for New-York market, come from Harrisburgh to Lancaster; thence to Philadelphia; to Trenton, Brunswick; then by steamboat to New-York, or cars to Jersey City.

The northern route from Ohio to Boston, and New-York market is from Columbus to Vernon, and to Worcester to Warren, and to Meadville, Pennsylvania, to Jamestown, Chautauque Lake, New-York; to Ellicotsville, Angelica, Bath, Ithaca, Prattsville, Catskill; thence to New-York by steamboat; but the recent route is opened from Bath to Corning, and thence by the Erie Railroad to Piermont, in railroad cars.

The first three classes of purchasers of cattle, generally put their cattle on a grass feed for spring, summer and fall, and in the winter feed them with hay; but seldom shelter the cattle in the southern part of Ohio at any time. Some persons give corn to the two and three years old cattle in the winter and spring to make them take grazing well for the summer.

We drove 600 head of cattle and more from Bloomfield to New-York last year, and the expense run from seven to sixteen dollars per head; hogs that have been fed with cattle, are driven to market with the cattle and follow the drive, feed in the same manner as on the feeding grounds. Hogs are considered a clear gain, and constitute the principal profit of feeding when cattle are dull and corn is high.

Corn is worth 35 cents a bushel this season in Ohio; the general average price has been for ten years past, from 12 to 30 cents per bushel.

When we can get 25 cents a bushel for our corn fed to the cattle, and the price which our droves of hogs bring in New-York market, we get fair pay for the expenses of feeding, but nothing more.

Hogs are bought for feeding at $1\frac{1}{2}$ and $2\frac{1}{2}$ cents per pound live weight.

The expense of feeding 100 head of cattle for six months may be set down as follows:

Dr.

Ninety-one bushels of corn to each one, at 25 cts. per bushel, per head, ...	$22 75
And for 100 head of cattle and 200 heads of hogs,	2,275 00
Expenses on a draft of 100 head of cattle and 200 head of hogs, from S. Bloomfield, to New-York market, ...	1,500 00
Gross cost and expense, ...	$3,775 00

Cr.

Price of 200 hogs at $4\frac{1}{2}$ cents per pound, live weight,	$1,820 00
Cost of hogs at purchase, at $2 a piece, ...	400 00
	$1,420 00
Sale of 100 head of cattle at $7.50 a 100, 600 lbs.,...	$4,500 00
Cost of cattle, ...	2,500 00
	$2,000 00

Gross expense out, ...	$6,675 00
Nett receipts of the same, ...	6,120 00
Loss by this operation, ...	$555 00
But most feeders give only 4 months feed, this is	755 00
Difference, ...	$200 00 pr.

But the market value in New-York is often higher than the above estimate, and all above yields a profit.

VINCENT J. WILLIAMS.

Judge Van Wyck observed that we shall be able to compete here at the North with the South and West, so heavy are the expense of driving cattle here.

Mr. Bell laid before the Club samples of his Mediterranean wheat, weighing 64 pounds a bushel; of his white sole flint wheat, weighing 62 pounds the bushel; white flint smooth head wheat, 62 pounds the bushel; yellow Indian corn, 62½ pounds the bushel. These samples are taken from the parcels which Mr. Bell will take with him to the World's Fair, in London.

The Club then adjourned.

H. MEIGS, *Sec'y.*

Farmer's Club, Dec. 17, 1850.

Hon. JAMES TALLMADGE in the chair.

HENRY MEIGS, Secretary.

R. L. Pell, of Pelham, made the following remarks:

The pine tree, of all the trees growing in the universe, is particularly considered the "builders' timber," as oak is the ship joiners. In Europe logs of pine, when only hewn square with an adze, and sawed into joists, timbers for roofing, girders, &c., are called fir, but when the logs are sawed into planks, they are called deals, which indicates the form.

England obtains pine timber from the immense forests on either side of the Baltic, from Prussia, Norway, Sweden, Germany and Poland, and it is called after the port from which it is shipped, as Riga, Dantzic; and the deals most in request are obtained in very great quantities from Christiana, in Norway.

The principal kinds of pine wood known in commerce are the yellow, white, and red. The yellow is grown in large quantities in Georgia, and other Southern States; and usually is called Georgia yellow pine, it contains a large quantity of turpentine, and is on that account much more durable and lasting than any other variety, when it is sawn into plank, it is used where strength and durability are most required, such as piazza floors. White pine, or *pinus abies*, holds much less turpentine than yellow Georgia, and is consequently less durable; it can, however, be worked more readily, does not warp easily, is less dear than the yellow, and can be worked with much less labor and expense. The pine work of this country, such as doors, surbases, inside shutters, are chiefly manufactured from the pinus abies. The pinus strobus, which abounds in Northern New-York and Canada, is soft, light, and possesses a fine clear grain, belongs to the pinus abies family, and is particularly valuable as affording boards and plank of great width, rendering it particularly useful in various joiner's work, but is seldom used for beams, not being considered sufficiently strong.

All the pine family should be remarkably well dried and seasoned before it is made use of for building purposes, and such pieces as contain sap, should not be used for the reason that it occasions what is usually termed dry rot, or in other words a fungi or minute plant, which spreads with great rapidity throughout the plank or board, feeding upon its sap, causing the fibres to become brittle, and in a short time inducing total decay throughout the whole structure, especially if no arrangement is made to admit a circulation of air, which has a tendency to prevent its ravages; in all houses built chiefly of white pine, a circulation should in no case be omitted. Where great endurance is required, the pine placed in confined situations should by all means be charred, or washed with dissolved sulphate of iron, or it may be impregnated with corrosive sublimate, Ryan's patent, rather too expensive for general purposes, still one of great utility.

Pine should never be used in stone or brick walls, as it will inevitably decay, and thus throw the wall. It has frequently been used for board timber instead of oak, being cheaper; the consequence generally is premature decay, and consequent injury to the wall.

Yellow pine is the best for floors of houses, in which carpets are generally used, as it is essential that they should not warp after they are nailed, but be tight and level; this description of stuff being fine grained is not apt to shrink, and consequently cannot prove injurious in any respect to carpets.

The name of the pine tree is supposed to be derived from the Greek word pinos, which word was used by Theophrastus to designate it; others imagine it to be taken from the cettic pin or pyn, signifying a rock. Thus the property belongs to the gymnospermous division of trees, and differs from the firs in the form of its leaves, which are long and spindling, growing in a group of from three to five radiating from a centre. There are more than fifty species of this family, and nearly all of them are worthy of cultivation, not merely as an ornament but as one of the most important articles of commerce, not only in this country but Europe. They are known to succeed on any kind of land, but best upon a loam with a clay subsoil. I say best, because that species of soil has generally been observed to produce a tree in great perfection for timber.

It may be grown in various ways, by grafting, inarching, layerings, by cuttings, and by seed, which last is probably the best, and most speedy; if sown in a fine pulverized rich sandy loam in April or May, say within half an inch of the surface of the ground. The best timber is grown in regions, where it progresses slowly to maturity, and has time to perfect itself, say eighty years.

The Scotch fir is considered the most durable of the pine tribe, on account of its brightness, tightness and stiffness. It is much sought after by joiners, and is particularly useful as girders and rafters, and is considered almost if not quite as durable as oak, that is to say when grown in Scotland, the climate of which country is admirably adapted to its cultivation. It might be grown probably in Canada to the same perfection,--grown in England it is far inferior to the Scotch. It yields pitch, tar and turpentine without injury to the tree. The white spruce pine is a very useful tree to the northern part of America, where its roots are made use of by the Indians as thread in the construction of their canoes, and its bark for the purposes of tanning leather. It grows about sixty feet high with spreading branches, the leaves are quadrangular, and acuminate.

The black spruce pine is also a habitant of the colder portions of North America, and grows usually in low wet lands, to the height of ninety feet; the timber is very strong, and peculiarly adapted for spars of ships. The essence of spruce is obtained by tapping the tree.

The Pinus australis is a native of the State of Virginia; it grows very erect to the height of eighty feet; it bears long leaves, three in a sheath, of a beautiful grass green; its cones are 7 inches long, covered with sunken scales; the timber is very valuable, exceedingly durable, clean and light; the tree, when tapped, yields superior turpentine; it will not grow in England.

Other pines might be mentioned, such as the Pinus pumilio, Pinus resinera, Pinus trutia, Pinus unicinata, Pinus halepensis, Pinus austriaca, Pinus pallasiana, Pinus laricio, &c.

President Tallmadge.—It is very desirable that this tree should be raised, in order to meet future demands for its very valuable timber; and in the cultivation of it we should follow the system of rotation found to be so useful and even necessary in plants. When we plant pines, therefore, let it always be on land cleaned of the hard woods, such as hickory, oak and others, because here the rotation is required, those elements in the soil which sustained them being somewhat exhausted, while the soil has now become friendly to the pine. We find pine trees and cedars spontaneously growing on worn out land left without cultivation, while we never see a pine or cedar grow spontaneously in cultivated soils. Pine trees like a light soil with clay subsoil. When we undertake to raise pine trees we should leave the soil about them entirely uncultivated, and so, when pines have been there, a new race of the hard woods love to grow. Thus the different races succeed each other. Whence the seeds come which grow these spontaneous races, is an unsolved problem. The pine tree is subject to attacks from insects. The curculio is one of its enemies and shews its sagacity by attacking the main shaft of the tree, instead of its branches. Most insects follow the habitations of man—and in cities, a countryman is horrified at the sight of the devastation of city foliage by worms, caterpillars, and other insects. Such a sight scarcely ever to be found in the country.

Mr. Sherman remarked, on the great importance of giving protection to all our little birds who feed on insects.

Gen. Tallmadge.—It is an evil practice of some young men and boys, to kill the little birds. The tame little cowbird is one which follows the plough, and eats the grubs as they are turned out by the plough share, and has been known to eat them out of the hand of man.

Mr. Meigs read his translation of a French paper on tea.

Gen. Tallmadge remarked, that as the tea plant was now established in Brazil, it is easy for us to bring the plants and seeds here—but the great difficulty in raising tea for market, has always been in the heavy cost of manipulating the tea leaves. This can only be done where labor is worth almost nothing, where the population is exceedingly destitute. But there is no doubt we have the soil and climate suited to grow tea, and perhaps we here may invent machinery when required to make it up as by hand, then it will become a great and valuable staple of our land.

Mr. Meigs observed, that such machinery would work as great a change as Whitney's cotton gin did, without which cotton could not be worn except by a comparatively small portion of mankind at this day.

Judge Van Wyck.—It is pretty much so even now with linen.

Gen. Tallmadge said there was another plant to the necessity of cultivating which he desired to awaken the public attention—that is madder, which can be raised almost as readily as carrots, and soils for which are found at the south in any requisite amount. Madder forms a dye altogether indispensable, and which probably will never cease to be so, and we ought to grow not only as much as we require at home, but as much as we can export.

Mr. Meigs read his translations relative to the new malady of the grape vine, the *Oidium* from *La Revue Horticole* and Annals D'Horticulture of Paris, 1850:

"It is no longer the potato that is a victim of disease—the grape vine now has a malady hitherto unknown, and of which the cause or causes, and the remedies or preventives are, as with the potato, as yet unknown. Alarming accounts are given of it and its march, and many persons dread lest the wine of France should be destroyed. It commenced in 1845, at Margate, near London, in grape vine conservatories—there it appeared as white dust, covering vines, leaves and grapes, resembling wheat flour or lime dust. The grapes soon stopped growing, began to crack open, the juices all escaped, and soon nothing remained but dry horny skins. The smell of these vines was very musty and disagreeable. In 1848 the disease reached the suburbs of London. In the towns of Clapham, Leyton, Bishop's Stortford, Islesworth, and many other locations this appeared. In the latter, among others, a rich gardener, by the name of Wilmot, gathered but *one bunch of grapes out of twelve conservatories;* all the rest being destroyed by this new malady; and out of nineteen conservatories, within a radius of six kilometres, (4 miles) thirteen were attacked by it and their entire crops of grapes were destroyed, and the same result was found on the grape vines *growing in the open air.*

It was hoped in France that it would not cross the channel—but it appeared in 1848, all at once, in the grape conservatories of Mr. de Rothschild, at Suresnes near Paris, and in the neighboring vineyards. In 1850 the vines in the immediate suburbs of Paris were attacked by it grievously, and it invaded also the precious collection of the grape vines of the world at the garden of Luxemburg. This malady is found to be a microscopic cryptogame, a fungus, of which, particular descriptions are given, together with drawings by the learned and Rev. Dr. Berkeley, of Bristol in England, who examined it carefully and called it Oidium Tuckeri, because a very able gardener of the name of Tucker first brought the malady into notice. On careful examination in France, the disease is precisely the same there as it is in England. It attacked first the Frankenthal grape and the Chasselas under gla s as well as in the open air; then it assailed the red grapes in the open air in that neighborhood.

The learned and the practical vine dressers are full of the subject seeking for the cause, the prevention or cure. It has attacked various other vines besides the Frankenthal, Chasselas and Red. But it was remarked that a Muscat of Alexandria vine, surrounded by infected vines remained untouched in the wood, leaves and fruit.

Mr. Pell said that our premium on cattle &c., should be enlarged.

Gen. Tallmadge observed, that some complaint has been made of the smallness of the premiums awarded by the Institute on cattle and stock—but this has been necessary by reason of the smallness of our funds; it has demanded great care and economy to raise the Institute to its present condition. But the time is near when it will be able to make these premiums all that they ought to be. And I will say, now again, that while the agricultural portion of our people (about eighty per cent of the whole people) pay the burthen of the taxes—they ought to have agricultural schools, whereas certain other Institutions which have no connection with farming have been favored with the most liberal endowments from the State Treasury.

Mr. Pell proposed for the next subject, the Tea Plant.

The Club then adjourned.

H. MEIGS, *Sec.*

[Revue Horticole, Paris, 1850.]

BRITISH TEA PLANTATIONS IN INDIA.

Dr. Royle, director of the Botanic Garden of Calcutta, has recently made an interesting report on this subject, from which we make the following extracts, with a view to the culture of Tea in our own country, already commenced successfully in South Carolina, by our valued fellow citizen Junius Smith.

Report of Dr. Royle.

Some ten years ago the French Government desiring to favor the culture of tea at home, and to give a new impulse to this new subject of French industry, sent to Brazil one of our colleagues, the late Mr. Guillemin, one of the assistants in the museum of Natural History—with instructions to bring home Tea plants—to study there the culture and method of preparing the leaves. He accordingly went there, and he brought back to Paris a considerable number of the Tea plants and the Tea nuts, with full accounts of the methods observed. We remember well the great zest with which this Tea plant was received among us. Our garden journals were filled with details in relation to its planting and success here. But this enthusiam, unfortunately, did not last long—and in reference to it we found ourselves just where our ancestors were at the time of Julius Cæsar. The Tea plants were soon left to die in the corners of some gardens, costly as they had been—and we went on to drink the tea from China as before. The fact is, Tea may be raised in portions of our climate, but the question of profit is another matter. We borrow from the Gardeners' Chronicle of London, under the direction of Mr. Lindley, the following observations. "The introduction of tea culture into Northern India, is one of the greatest events in the social history of this country. Independently of the commercial advantages which will result from it, labor of production and management will be a great source of profit and comfort to the people."

Farmers' Club, Jan. 7th, 1851

Martin E. Thompson, Esq., in the chair.

H. Meigs, Esq., Secretary.

Subjects for discussion—*The cultivation of Tea and Madder.*

Mr. R. L. Pell, of Pellham, made the following remarks:

Mr. Chairman—The result of my researches and observations, in reference to tea, is, that this beverage, singular as it may appear, has almost become a necessary of life, not only in the British Islands, but throughout Europe and most of America; notwithstanding it was scarcely used beyond the walls of China previous to the middle of the seventeenth century. It is not known by whom tea was first imported into Europe. In 1664 it was so rare in England, that the East India company brought two pounds and two ounces of it to the king as a present from Holland. In 1666, Lord Arlington and Lord Ossory brought over from Holland a quantity, which was sold in England for sixty shillings sterling per pound. In 1667, the first order was given by the East India company for one hundred pounds, for the purpose of making presents to their friends at court. In 1678, 5,000 pounds were imported. In 1845, about 50,000,000 of pounds were imported, and the duty amounted to 4,603,000 pounds.

Until lately, the world generally has been deficient in accurate information with respect to the tea plant, as it was cultivated principally in China and Japan,—countries to which strangers were forbidden access.

Linnæus imagined that there were two species, one of which produced green, and the other black; this idea has not been confirmed. Botanists are now of opinion that the various qualities of teas depend upon varieties produced by soil, climate, and the age at which the leaves are plucked, as well as upon their management afterwards. When the leaves of black and green teas are expanded by hot water, a slight difference of character is observed; but not sufficient to consider them distinct species.

The tea shrub belongs to the class and order Monadelphia Polyandria, in the Linnæan system. More recently it has been considered to belong to the order Theaceæ, which includes our beautiful camellia. It frequently grows to the height of 6½ feet, when cultivated and kept within proper bounds; but if allowed to run wild, sometimes reaches twenty feet.

In China, tea is generally cultivated in small plantations, and resembles very nearly the myrtle; the blossoms are perfectly white, and exceedingly fragrant: when they perish, soft green capsules appear, each containing three seeds, extremely white. The capsules are pressed for the oil they contain, which is used throughout China.

The tea plant does not require a tropical climate, but flourishes remarkably well in temperate regions; the best section for its cultivation in China, is between the twenty-seventh and thirty-first degrees of north latitude, though it thrives not only to the north, but south of these parallels.

It succeeds well in Tonquin, Ava, Cochin China, and Japan. I have raised it in my green-house, and brought it to perfection.

The best provinces for black tea, are Tokien and Canton, and for green tea, Kiang-nan, Kiang-si, and Chi-kiang. The most miserable teas are raised in Woping, a district in Canton.

The cultivation of the tea plant is said to require much care. It is raised principally on the sides of hills, and when it is desirable to increase the quantity, and improve the quality, the shrub is pruned, and not allowed to grow higher than three feet. When the leaves are gathered, they are plucked one by one, and as they select them, so the kinds of tea vary—each laborer gathers in this manner from 11 to 15 pounds per day. At the age of seven years, the leaves produced are of such inferior quality, that the trees are cut down, and the young fresh shoots take their place. The leaves are not usually dried by the cultivator, but are carefully picked, assorted, and carried to market and sold to the dealers, who dry and prepare them, and then dispose of them to the tea merchants, who sort them according to quality, give a final thorough drying, and pack them in chests, stamp the chests, and dispose of them.

The youngest leaves afford tea of the most delicious flavor, and are gathered at four different seasons of the year.

In 1834, Mr. Reeves gave an account of the preparation of tea before the House of Commons as follows, to wit:—" The tea plant in China has two distinct varieties, if not species, which respectively yield the black and the green teas. The tree is an evergreen. The picking of the leaves begins about May, when the plant is in full leaf, but ready to shoot out other leaves. In the black tea plant, the first shoot, or the bud coming out, then covered with hair, forms the fine flowery pekoe. A few days more growth, makes the hair begin to fall off; the leaf then expands and becomes the black leafed pekoe. Some young shoots have fleshier and finer leaves, which make the souchong; the next best leaves make the campoi; the next congou, and the refuse and inferior leaves the Bohea. These are the states in which the black teas are collected by the tea farmers; and some very coarse teas used by the Chinese themselves, and cheaper than the sweet briar leaves could be brought to market in this country. The tea of Woping, in Canton, is of this character. There is a greater difference in the qualities of black teas than of green.

"The varieties of green tea appear to originate, not from the stages of picking like the black, but partly from difference of treatment and manipulation, partly from difference of soil. A large proportion of Twankey is the growth of a different district from that which produces the Hysons. When a tea merchant buys green tea from the farmer, he subjects it to the following process: he sifts it through one sieve, which takes out the dust, the young hyson and the gunpowder; then through another sieve, which passes the small leaf hyson of commerce; two other sieves successively take out the second and largest degree of size; and what does not pass the third, forms hyson skin. The teas then undergo the process of firing, in an iron pan, at a great degree of heat, which gives the leaves a tighter twist, and brings them up to their color. The tea which passes the first sieve is then put into a winnowing machine, and the fan blows the light leaf at the farther end, and the larger broken leaf at a shorter distance. The heavier teas, as the gunpowder and hyson, fall nearer or farther from the hopper, according to their gravity, and are separated by the winnowing machine. When fairly made, the differences between the gunpowder and the young hyson will be this: the young leaf which takes the long twist, will form the young hyson; and that which takes the round twist, will form gunpowder. The same mode of manufacture is pursued with respect to Twankey tea, the fine leaves of which make hyson."

Another account states, that the drying of the leaves is begun in the sunshine, after which they are carried into houses erected for the purpose, with charcoal stoves, each being covered with a large flat iron pan, on which, after it is heated to a certain degree, a half or three quarters of a pound of the leaves are put, and stirred about briskly, with a brush, to cause them to dry and curl up. They are then swept into baskets and rubbed or rolled between the hands to curl them still more, and again subjected to the heat of the stove.

By repeating this process they are made to assume the appearance which they present. There is no truth in the report, that green tea owes its color to being dried on copper plates, for it is in fact dried upon iron plates. This tea has been carefully analyzed, and chemical tests do not detect any copper. It has been stated that vegetable dyes are used by the Chinese, for the green; and it is asserted that they can make either black or green tea from the same leaves; but however this may be, those two kinds of tea are mostly produced from different plants and in different districts.

Bohea tea is so called from the Wo-ee-hills in Fokien, the country where black tea is chiefly grown.

Congou black tea is the variety usually sold in England, where the consumption of it is very great; it has a particularly agreeable flavor and is there a general favorite.

Pekoe or (pe-kow) "white leaf bud," is the finest of all the black teas. It consists of the early buds of the best tea plants, and is usually put up as presents, intermixed with flowers, generally those of the fragrant olive. Its infusion is light, inclining to green, has a violet scent, and agreeable flavor. It is more common in Russia than in England.

Twankey is the coarsest of the green teas, and is seldom imported.

Hyson teas are the most favorite teas imported into the United States, together with the hyson skin, which consists of the inferior leaves separated when manufactured.

Gunpowder tea is the best of the hyson, or green teas, and is so named from the minuteness of the grain. It consists of the first leaves of the green tea plant, and is sometimes mixed with flowers to make it more fragrant. Several plants are cultivated by the Chinese for this purpose, among which may be named the Olea fragrans, Camellia, Sassanqua, Polygala thuraus, Rhamnus thuraus, &c.

Different tea farms in China produce teas of various qualities, according to the skill of the manufacturer, difference in the soil, etc.

Tea, when chemically analyzed, is found to contain woody fibre, mucilage, tannin, a narcotic principle and Theine, supposed to be identical with Caffeine, one of the constituents of coffee—on this account Liebig has conjectured the reason why tea often satisfies the poor as a substitute for animal food, and why persons who take but little exercise are so partial to it as a beverage.

Tea is often adulterated with the leaves of black currants, syringa, sweet briar, and cherry tree. During the time of George the II. in England, it was found necessary to pass acts in parliament, specifying severe penalties against those guilty of this offence. The Chinese frequently adulterate their teas, before exporting them, and are said to cultivate large quantities of various trees for this purpose.

Tea has been used as a beverage by the Chinese time out of mind. In the reign of Emperor Fitzong, in the 724th year of the Christian era, over eleven centuries ago, tea was taxed much to the dissatisfaction of the people, as they considered it a necessary of life. They drink tea without milk or sugar; they usually place some tea in a cup, and pour boiling water on it, and then cover it up for a few minutes that it may draw, after which they drink it as hot as possible. Sometimes they beat up the yolk of fresh eggs with sugar, and mix it with their tea.

The Tonquinese, Cochin-Chinese, grow and import tea. In Camboja and Siam it is much used, likewise with the Burmese.

The natives of Hindostan, Persia, Arabia and Turkey use it. but only for its supposed medicinal virtues.

The Tartars in order to make tea portable are accustomed to moisten it with a glutinous fluid, and then press it into moulds similar to bricks; when prepared for use, the brick is scraped and boiled with butter, flour, milk, and salt, which compound is said to be palatable even to Europeans.

Many have been heard to exclaim against the use of tea as a constant beverage, urging as a reason, that it is poisonous to a certain extent, and exceedingly injurious to the nervous system, debilitating the constitution, and acting as a slow poison. Not withstanding, the use of it continues to find its advocates; and will become more universal, when all that country situated between 31 and 36 degrees of latitude, consisting of parts of North and South Carolina, Tennessee, the north parts of Georgia, Alabama, and possibly Louisiana, become, as I now predict they will, great tea growing districts. We shall then enjoy that grateful article of diet, more highly and deliciously flavored, than any that has ever yet reached us from that benighted country, China—as it is well known to us all, that a sea voyage of 15,000 miles impairs its flavor. The Russians drink much better tea than we do, from the fact that they import it over land, and consequently obtain it free from the ill effects of a voyage. It has been known to sell as high as $50 per pound at St. Petersburgh. What a luxury will it be to us to raise our own tea, and drink an article at least as delicious as that costing in Russia $50 per pound! The boy now lives who will see all this come to pass.

Liebig observes, "We shall certainly never be able to discover how men were led to the use of the hot infusion of leaves of a certain shrub (tea,) or of a decoction of certain roasted seeds (coffee.) Some cause there must be, which would explain how the practice has become a necessary of life to whole nations."

Universal experience has taught mankind, that tea is a very valuable diluent, and extremely useful when febrile complaints first begin to attack man; being astringent as well as sedative, it is particularly refreshing, and renovates the system rapidly after great fatigue—and I truly believe the use of it, among the lower classes particularly, has been exceedingly beneficial as affording a substitute for stronger and more hurtful stimulants. In China, the poor people raise the tea plant in their gardens, in sufficient quantities to afford them enough for their own use, and when the leaves are picked, they are dried in an iron kettle, by fire heat, until they curl up, and when fit for picking, are placed in baskets and hung to the rafters of their cottages, there to remain one year before considered fit for use.

The following is a list of the teas known in commerce, and usually exported from China to foreign countries, to wit:—

Bohea of Woping or Canton,
Bohea of Fokein,
Congou,
Cowpoi congou,
Fine flowery pekoe,
Cape,
Orange Pekoe,
Ankor Souchong,
Souchong,
Among the black teas.

Pearl Gunpowder,
Imperial Gunpowder,
Twankey,
Hyson skin,
Young Hyson,
Hyson,
Among the green teas.

And they cost in China, from one shilling to three shillings per pound. The names above given, are known in China as corruptions of their language; though they generally describe teas among themselves as inferior, middling, and superior. A good Chinese tea judge, who has experience in the business, can discriminate teas by the smell, and agreeableness of their odor.

Tea should never be exposed to the air after it is prepared for packing, preparatory to exportation.

The Chinese prevent this by an ingenious and effectual method of preparing their packing boxes, which usually come to this country lined with lead. The operation of getting them in readiness is performed thus. A man places himself in a sitting posture, upon the floor, before a large flat stone, and at the same time he holds another flat stone upon its edge. A small quantity of melted lead is poured upon the horizontal slab by an assistant, when he immediately lets the vertical stone fall upon it, which presses it out into a thin sheet; these sheets are trimmed into proper shape, and used for the linings to the boxes, which are made of thin hard wood, dove-tailed at the corners, and covered with paper containing Chinese hieroglyphics illegible to most persons.

The consumption of tea is enormous, as the following table will show:

France consumes annually less than any other nation, still in 1846,

France consumed about...........	255,000	pounds
Germany, ...	2,100,000	"
Holland, ...	3,300,000	"
Russia, ...	6,600,000	"
United States, ...	10,100,000	"
British America and West Indies,..	1,600,000	"
Australia, ...	256,000	"
British India, ...	1,100,000	"
Great Britain, ...	50,000,000	"
	75,311,000	lbs.

This vast amount of tea is imported into the several countries named, chiefly from China. Still it is cultivated in other countries, and has been for very many years; and as far back as 1793, Lord Macartney obtained tea plants from China, and had them planted in Bengal. And to some extent tea has been obtained in India, particularly in the Nepaul country, where not only the climate but the soil has been found particularly favorable.

Mr. Royle in his "Illustrations of the Natural History of the Himala and Cashmere," has published much collected information respecting the tea plant, and upon the conditions which relate to the vegetation and cultivation of these plants in China; and finally, Mr. Royle came to the conclusion, that the Himala country enjoyed the proper climate, elevation, soil and latitude to grow the tea plant to great perfection.

Assam is a hilly country, with a fine temperate climate, suitable to tea culture. Java, Rio Janeiro, and Brazil, have likewise tea plantations within their boundaries; and the only drawback thus far, appears to be the high price of human labor in the different countries that have attempted its culture. If notwithstanding all these difficulties, our countrymen undertake its cultivation, between the 34th and 36th degrees of latitude, which climate is admirably adapted to its requirements, it will not be long before some ingenious eastern man will invent a machine for gathering, drying, and curling, at a mere nominal cost.

There are various plants growing in different countries, used as a substitute for tea. In Mexico, the *Psoralea glandulosa* is used extensively. In New Grenada, they use a plant called Alstonia theaformis, considered equal to Chinese tea; in North America, Gaultheria procumbens; in New Holland, Conea alba; and in Brazil, the leaves of the Lantana macrophylla, the infusion of which in hot water is said to have very exhilarating qualities.

There is a tree peculiar to Paraguay, called Ilex Paraguensis, growing wild and in great abundance in the forests of the eastern and northern parts of the country; the leaves, when prepared, are called by the inhabitants, Yerva maté, from a peculiar kind of tea pot, from the spout of which, with a strainer attached, the hot tea is imbibed. This tree is an evergreen, growing a leaf very similar to the Chinese tea, and reaches a size equal to an ordinary orange tree. These trees have been in some instances improved by cultivation under the auspices of the Jesuit mission, yielding a finer leaf, the name of which is Caamino. When the leaves are collected, they are dried by fire heat, and packed in hide bags containing 200 lbs. each. These bags are exported to La Plata, Peru, Quito and Chili, where the inhabitants are extravagantly fond of it, and drink it throughout the day. It is used sometimes with sugar, and at other times with lemon juice. It is said to have a sedative effect, and produces bad consequences if too frequently indulged in. Paraguay prepares about six millions of pounds yearly. Kotzebue states that it is used in Chili alone, to the amount of $1,000,000 annually.

The mode of preparing the infusion of leaves, is nearly uniform throughout Europe and America; to make it as we make it, then, it is essential that the water when poured upon the leaves should be boiling, and that the tea pot should be heated by rinsing with some hot water before the leaves are placed in it, or otherwise it will abstract heat from the water poured upon the tea, and thus lessen its effect. A small quantity of water should be placed upon the tea first, and allowed to draw, when more should be added for the first infusion, which is always the best, containing the principal part of the aroma.

Dr. Kitchener says that all the water necessary should be poured in at first, as he considers the second drawing bad, and recommends the use of two tea pots rather than two drawings. Dr. Trusler's method was to make a strong infusion by placing boiling hot water upon the tea, and allow it to stand twenty minutes, putting into each cup no more than is necessary to fill it one-third full; then each cup was filled with hot water from an urn; thus the tea will always be hot, and each cup will be of equal strength; by this mode, one teaspoonful is considered enough for three ordinary cups for each person. Dabuisson's method was to put tea leaves into a kettle with cold water, cover it tight, set it on the fire, and make it almost, but not quite boil; then take it from the fire: when the leaves sink, it is ready for use. Doctors always differ.

About forty years ago there was a learned contest among scientific men, respecting the best substance for tea pots to be made of, to draw the tea best; metal was supposed by some to be the most suitable, as they imagined it would prevent, in a greater degree than any other substance, the escape of heat; others supposed earthenware was a worse conductor than metal, and would prevent in a greater degree the escape of heat. Each substance had its advocates; they generally decided for one, while experience favored the other.

About this time Professor Leslie, of Edinburgh, found that, although all heated substances throw off invisible rays of radiant heat, yet that the quantity projected depended much more upon the smoothness or roughness of the surface, than upon the conducting power of the body; and that polished metal, although one of the best conductors of heat, was one of the worst radiators, metal not polished being a good radiator as well as conducter. Since the date of which discovery, bright metal tea pots have been considered to be most effectual in preserving the heat of the water; consequently both theory and practice now agree as to the substance best adapted for tea pots."

Mr. Meigs read the following translations by him:

[Revue Horticole, Paris, 1850.]

French Tea.—These words sound well! Would not one be led to believe that France was going to rival China in the production of that beverage so dear to the children of England? At least, if we are to believe M. Lecoq, (of Paris) this might happen, and that if it don't it is our own fault. As a proof of this, he exhibited, at the last Horticultural Fair, two kinds of tea of his own raising and prepared by his own hands; he calls them *Souchong* and *Pearl Green Tea.* M. Lecoq, who is devoted to the tea industry, with which he wishes to endow France, *whether she will or no*, assures us that he has now imitated all the various qualities of the Chinese tea, and that they will bear competition with those of the Celestial Empire. Very good! We shall see! The honorable and industrious gentleman is agoing to the Grand Exhibition of 1851, in London, to make his tea figure there. Perhaps our neighbors may ask him to give them a taste of his tea; and they are pretty good connoisseurs, and we can hardly teach them anything on the subject of *tea tastes.*

From Dr. Royle's report on culture of tea in India, translated by Mr. Meigs:

In the beginning of 1827 I spoke to Lord Amherst, then Governor General of India, of the probability of the success of the culture of tea in the mountains of the Himalaya, and I made it the subject of a special report which was presented to the Government of India that year. In that report I remarked, that the tea plant is far from being so delicate and so limited in its geographical distribution as was generally supposed. That, indeed, it seems to attain its highest degree of perfection in the mild climate of Nankin, but flourishes in the higher latitutes of Pekin and in Japan. When Lord Bentinck visited the botanic garden of Saharunpore, in 1831, I did not fail to speak to him of the culture of teas, as presenting for India a new source of prosperity. I was not alone in the opinion that it could be readily acclimated in India. This idea had been long ago given by Sir Joseph Banks, but I did not know it—that it would succeed in the Himalaya mountains. And Dr. Wallich, in 1832, presented to the House of Commons (England) a memoir, in which he recommended the cultivation of it in the districts of Kemaon, Gurhwal, and of Sirmore. After some hesitation on the part of the government a committee was appointed to examine this question, whose report was entirely favorable; declaring that there was the greatest chance of success on the Himalaya mountain basis and the valleys of that great chain.

In consequence the work commenced. Seeds arrived at the garden in Calcutta in January, 1835, and they produced a great number of plants, which were despatched to the localities recommended for nurseries. Some of them at Bhurtport, between the chains of Bheermental and the Gazur, at the elevation of 4,500 feet above the level of the sea; some at Luchmaisir, near Almorah, at 5,200. *One thing essential to the success of tea culture, is that it should be in a climate which has a very decided winter of six weeks or two months, and in which it freezes and snow falls.*

Since 1845, the plantations have been much extended. In Deyra only, the Director, Dr. Jamison, says 100,000 acres are suited to it. More than half a million shrubs were growing. In 1846, a large quantity of Himalaya tea was sold at Almorah, at considerably augmented prices. The medium price was six and a half rupees (about four dollars) a pound; some qualities sold as high as $4.60 a pound, and these were chiefly purchased by natives to sell again in Thibet and in Chinese Tartary. In 1847, the prices at the same place rose to, for green tea, from $5.40 to $6 a pound. The government then sent Dr. Jamison to create new plantations throughout the mountainous regions on the north-western frontier.

Mr. Fortune is now occupied in China with the tea business. England will soon become a strong competitor with China. The experiment has been successful, and an immense revenue will be received by the government on the sale of its teas.

The snow often falls on the tea plants so deep that, unless they were bundled together, the separate stalks would be broken down.

Mr. Aguiar, Consul General of Brazil, presented samples of tea of Brazil which were distributed among the members of the club, who were requested to try and report as to their qualities.

Judge Van Wyck observed that our object is to learn how to grow tea in our own country. That Junius Smith, a gentleman of much travel, great experience and worth, has devoted himself to its introduction, and has successfully established a tea plantation at Greenville, in South Carolina. He entertains no doubt of the capabilities of large portions of our country, for the production of tea to any desired amount, as readily as of any of our common plants. It is said, that the best tea in China is that raised near Pekin, 40° N., and it is cultivated with success from latitude 22° to latitude 45° north, although the latter is rather too far north for the best tea. Mr. Smith believes that it will flourish here, from latitude 35° to 40° north; that it loves a temperate climate, and we have it here. Certainly, we ought to raise all we want, and thus save the vast sums of money now paid to others for it. Tea is grown in tropical climates, as in Java, and in Brazil, but I don't know whether the qualities are so good. The raising of the plant with us in any quantity is an easy matter, but preparing the leaves of it for use, so as to pay, here is the difficulty, and this may prove small, on carrying the experiment through. Junius Smith deserves the thanks of his country for his devoting so much time, labor and expense to the great purpose of making tea a crop of this Union.

Mr. Brown.—The Horticultural Society of London, recently sent Mr. Fortune to examine Oriental Botany, and from his examination of the habitat of tea in the East, my impression is decidedly that we possess regions so similar, that there will be no difficulty in successful culture of it here—but the great difficulty will be the cost of preparing it for commerce. We shall have to simplify and cheapen the process by some means cheaper than human hands—and indeed an unpleasant idea occurs, when we reflect that each leaf of tea has been handled, *and by what hands?* in many cases. And in handling it, a very corrosive juice is expressed, which acts upon the hands. Yankee ingenuity must provide a substitute here, if we would succeed in making tea one of the American staples.

Dr. Antisell.—There is not a doubt that tea will grow here in regions similar to those of China, especially considering that the United States and China are similarly situated, on the eastern sides of continents, and the same northern parallels of latitude. But I doubt whether we shall successfully sustain competition. The unavoidable tedious process of getting it leaf by leaf—carefully selecting leaves of the same condition, to form one quality of tea, is entirely too costly for a freeman. Even in Assam where labor is so greatly cheaper than our own, it has been proved to be too expensive. The firing of tea leaves might be dispensed with, as it is with that sent over land from China to Russia, that being prepared by aid of the heat of the sun only. Tea is found growing wild in Assam.

Mr. Meigs.—In Brazil the hands pick about fourteen pounds of leaves a day.

Gen. Chandler requested members who take samples of the Brazilian tea, to make report to the Institute, as to their qualities.

Mr. Pell.—I have grown tea plants on my place, which yielded their beautiful and highly fragrant flowers, and then the nuts. I did this in my conservatory.

Dr. Antisell presented for inspection a specimen of phosphorite of lime, (phosphate of lime) a great mass of which has been recently found in Dover, New-Jersey. This native article is fully equal in value, as a manure, to calcined bones. I have analyzed it, and found it to contain ninety-three per cent of phosphate of lime. It is soluble in muriatic acid, like bone. Small quantities have been found in other places, but here it is in large masses.

Judge Van Wyck alluded to the statement made by Professor Johnston, in one of his lectures before the Institute, viz:—that they were making manure of a like substance in England, producing in value, several millions of dollars per annum. It was found there, like the specimens before us, in localities with the ore of zinc.

Mr. Bowman.—The discovery of native phosphate of lime in such masses, was of importance. He had bought ground bone at $1 per barrel, sent it to his farm in Virginia, where by putting it in poor land which had yielded only five bushels of wheat, the bone and good cultivation had given him forty bushels to the acre.

Dr. Antisell remarked that the phosphorite was as easily ground as bone.

Chairman.—The subject of Madder was noticed for discussion to-day.

President Tallmadge.—I had intended not to speak on the present occasion, but I will begin where others leave off. As to the subject of tea, a few words. I have no doubt whatever of our power to grow tea here, but the whole question (in my judgment) turns upon the point of preparing the leaves—the manipulation of them. I will not consent that my fellow citizens shall be reduced so low as to labor like the poor people of the Eastern world, who are compelled to pick tea leaves and roll them up, as is said for wages of one cent a day. But if we can invent some suitable machinery, which will, like the cotton-gin, supersede hand labor, then (as I had occasion to remark, at the last meeting of the club,) we may supply mankind, or a large portion of them, *with tea as we have done with cotton.*

As to madder, the well known and indispensable dye, (taking the place of other much more costly dyes,) we can grow it and with profit, to any amount. In 1836 we paid Europe for our madder about three millions of dollars, which cost has already doubled and must constantly increase upon us in all time to come, with the growth of our population and manufacture. We must therefore, if true to ourselves, make all our own madder, at least, if not for exportation. Madder demands such soils as we have in vast amounts—the fertile, alluvial and other lands of our country, of which our vast rivers furnish in their valleys, more that are free from swamps than any other country in the world. We must not expect that our shallow ploughing and neglected culture will answer for madder. Take the margins of our mighty Mississippi, rich in alluvium, dry enough for cultivation at the proper season; in this particular our country is peculiarly blessed. He who will grow madder away from these rich regions of soil, must make his land rich, and quit our bad habit of shallow ploughing and plow deep: the one produces with great profit, the other at a cost. We grow rice largely, although its culture is very disagreeable, immersed for a time as the growing crop necessarily is in water.

Dr. Antisell's specimen of phosphorite for manure, will, I hope, prove highly advantageous to our country and make it unnecessary to pound human bones together with those of horses, found on the battle fields, like that of Waterloo, and exported to England for manure. What, if the enormous sums of England only, wasted to make this ominous manure, had been employed in works of peace? Why, the whole of England, which is only of the medium size of our separate states, might be covered with a plate of gold. How rich and how beautiful and how perfect might England have been made by the wasted wealth of her wars of ambition? Take our own case, equally strong. It is said by the public press, that our recent war with Mexico has cost us 217 millions of dollars, the one half of which would make a railroad to California, connect us with the Pacific, by overleaping distance and by a speed keeping up with time, and ending the journey almost with the setting sun.

And while we talk of improvements, let us see that libraries fit for all citizens be multiplied in our land, rather than only here and there some piles of Latin books.

My family has tried the Brazilian black tea, and pronounced it to be as good as the ordinary black tea of China. The leaves do not appear to me to have been so closely rolled up as the Chinese—a pound of which occupied a much less space than this Brazilian.

Subject for next meeting.—Milk, and the various articles of food obtained from it, such as butter, cheese, cream, &c.

The club adjourned.

AMERICAN INSTITUTE,
Farmers' Club, *Jan.* 21*st*, 1851.

JOHN BOWMAN, Esq., in the chair. HENRY MEIGS, Secretary.
The Secretary read the following paper prepared by him.

BUTTER AND CHEESE.

[London Farmers' Magazine, Vol. 11, 1845.]

The Institute is performing its duty by collecting valuable information and then diffusing it. Washington Irving gave a beautiful example of this useful task when he made the Analectic Magazine some 30 or 40 years ago under the Latin line, "sparsas colligere flores," to collect the scattered flowers. The Institute already possesses and exercises this power. Its library receives all the most valuable publications of the world relative to its work. (*i. e.*) The promotion of agriculture, commerce, manufactures and the arts.

I quote that valuable magazine, the London Farmers', on the making of Cheshire cheese, that we may try their modes together with our own. After the well known precaution as to perfect cleanliness and coolness of the dairy, it adds that a free circulation of air and shutting out light as much as may be, by covering windows &c. with wire gauze, fine enough to shut out all insects, is important, and particularly that the temperature of the dairy must be maintained as equal as possible. The produce of each milking is set by itself. It should be strained through a brass sieve, fine enough to catch hairs. If any milk is spilled, it must be immediately wiped up, or it will become sour, and so taint the air of the dairy *which should be as sweet as a cow's breath and as clean as a new pin!!*

Some persons fancy that by allowing the milk to stand three or four days, it throws up more cream; this is a mistake. In forty-eight hours, milk will throw up to the surface as much cream as if it stood for a week; and when we come to speak of the making of butter, we will show that stale, sour cream cannot be made into firm, delicate butter. Butter should be handled as little as possible; but the buttermilk must be every drop got out by working it with the wooden skimmer or dish. It must be washed, but that too as little as possible for much washing weakens its body, injures its aroma and color. We recommend the first washing it in clean fresh made pickle, of *a pint* of salt to three gallons of water. Wash a second time with a pickle made of *four pints* of salt and one ounce of saltpetre to three gallons of water and expressed again.

Salting.—The finest rock salt should be used. The saltpetre should be pounded very fine and mixed with the salt. To a firkin of sixty-eight pounds, give two and a half pints of salt and one ounce of saltpetre. It is not advisable to use any coloring whatever. After the butter is salted leave it in the tub to drain, for the drier it is, the more waxy it will cut.

CHEESE. *Vol.* 12.

It has sometimes been a matter of dispute amongst Englishmen which county or district is most famous for the making of cheese. If quantity as well as quality be considered, the decision must be in favor of Cheshire, in which, on a moderate computation, there cannot be made annually, less than 12,000 *tons*, a considerable portion of it, excellent. The fame of this Cheshire cheese is as old at least as the reign of Henry the first, A. D., 1100. The Countess Constance of Chester, though wife of Hugh Lupus, the king's first cousin *kept a herd of kine* and made good cheese, three of which she presented to the Archbishop of Canterbury. The old British did not know how to make good cheese until the Romans taught them.

It is scarcely necessary to premise that milk from which cheese is made consists of three distinct parts: cream, curd and whey, into which, by repose, it spontaneously separates; but this separation can be accelerated by infusing a small quantity of a simple acid extracted from curd and dried *maw skins* (rennet) which have been previously steeped in warm water. The art of cheese making consists in the complete extraction of the whey and in the proper compacting and curing the curd. The richness of the cheese depends on the quality of the milk, or in other words, on the proportion of cream which it contains. I have had fifteen years experience in cheese making.

Mr. Pell, of Pellham, stated that he had given attention to this subject of milk and butter, and would submit a few remarks:

We prepare numerous articles of diet from milk, from the fact that it undergoes various chemical changes. It is only obtained from animals belonging to the class Mammaliæ, who secrete it for the nourishment of their young. The milk of each of the mammalia tribe is distinguished by different peculiarities, and as the milk of the cow is the most useful to man, I will first confine my observations to it.

If milk is taken from the cow daily, she continues her supply for a long period, and is consequently of inestimable value to us. We are indebted to her for the most essential articles of our daily food, to wit—*cheese*, *butter* and *milk*. When milk is first taken from the animal after calving, it presents a yellowish white rich appearance, of an agreeable though saccharine taste, and its specific gravity is greater than water. It has been frequently observed that the Alderney breed give the richest milk, though the quantity is smaller than other breeds. The first milk drawn from any cow is inferior and thinner than that which succeeds it; as the dairy maid progresses in the operation, it gradually and progressively increases in richness of quality, until that last drawn becomes at least ten times richer than the first. It should not be carried far, or much shaken before it is placed in the pans preparatory for the cream to rise; the sooner it can be so placed after it has been drawn from the cow, the better.

Milk, when exposed to fire heat, will boil at 199°, when a curd is coagulated, and rises to the top in the form of very thin skin. If this be skimmed off, another immediately succeeds it; this is the pellicle, which continues to rise until the residuum presents a blue, watery appearance. Milk can be slowly evaporated without fire heat, until it forms a thick white substance, known to chemists as franchipane, which may readily be made to form a delicious custard by mixing it with sugar, almonds, &c.

If a farmer is desirous of obtaining a large supply of rich milk, he must be generous to his animals, and keep them well supplied with rich luxuriant pasturage, otherwise he will be most wofully disappointed, as no animal shows her keep more rapidly than the milch cow; and if she has been fed on turnips, cabbages, or by chance has met with the wild onion in her travels through the pasture, you immediately observe it, not only in the milk, but in the butter; or if fed in cities on brewer's grains, it is at once perceptible by the blue watery appearance of the liquid.

Milk undergoes, when suffered to remain quiet for a short time, a spontaneous change, and divides itself into two parts, one of which, a rich yellowish unctuous fluid with a delicious taste, containing the butter, rises to the top, and is usually known as cream—the other part remains at the bottom of the vessel, and is called skimmed milk after the cream has been taken off. This matter presents a bluish white color, and if exposed to a temperature of 70° for 24 hours, becomes a sour coagulum, unfit and incapable of forming cheese. During this spontaneous change, an acid has been formed, separating the milk into two portions, called whey and lactic acid.

To produce the proper curd, or coagulum, necessary to make cheese, rennet, or the inner coat of the stomach of some ruminating animal, for instance a calf, boiled to a liquid, must be employed, treated to a temperature of 100°. The inside of the stomach of pigs, or the membrane lining the gizzard of fowls, is frequently used to turn the milk; vinegar and other acid will have the same effect. The Dutch use muriatic acid in the place of rennet. Some astringent vegetables will effect the same object. Molasses, alcohol, and neutral salts, have been used with good effect.

It is singular that curd formed by spontaneous coagulation is weak, and unites with water without difficulty; whereas that artificially produced is very firm, and perfectly insoluble in water.

Casein, the basis of cheese, is white, inodorous, insipid, and insoluble in water. When newly made the whey adheres closely to it; after pressure and drying this matter becomes cheese.

There is considerable sugar in new milk, which has medical value on the continent of Europe, in consequence of which much sugar is manufactured in a solid form from it by the Swiss; it much resembles loaf sugar, but is less white, far less sweet, and less soluble in water. To make it, take the whey produced in making cheese, separate the butter it contains from it by gentle heating, then boil it down to the consistence of syrup; pour it into earthen pots, and set it in the sun until it becomes nearly solid. When the sugar is required, this solid mass is put into water and heated until the sugar is dissolved, this liquor is filtered through a linen cloth, which separates the insoluble impurities, it is then clarified with the whites of eggs, and deposits, when cool, a crystalline mass, which is the sugar of milk.

Milk, intended to form cream for butter, should be placed in shallow vessels in a dairy where the temperature ranges between 50° and 55°, when the cream rises with great regularity. If the temperature is as low as 40° it rises with much difficulty, and in either case presents a yellowish-white fluid, unctuous and smooth to the touch, and of a delicious flavor. If left standing in the vessel for a few days it will become a little acid, in which state it should be churned. No acidity will be perceived in the butter.

Skimmed milk forms a delicious article of food prepared in numerous ways; for instance, if kept for thirty hours, it coagulates and separates into whey, which may be eaten with powdered sugar and is delightful.

If kept twenty-one days, in a moderate temperature, it passes into what is termed vinous fermentation, owing to its saccharine, and forms a vinous liquor, from which ardent spirits may be obtained.

Skimmed milk, by analysis, affords, in 1000 parts, water, 928.75; butter, 28.0; sugar of milk, 35.0; lactic acid, acetate of potash, and a trace of lactate of iron, 6.0; chloride and phosphate of potash, 1.85; earthy phosphates, 0.30; and a small portion of sulphur.

The importance of milk as an aliment in domestic economy is of vast value, and any improvement conducive to its production, by enlarging the breed of animals kept for that purpose, or the mode of feeding and managing the same, should meet with cordial approbation by the community at large. Its use is of great authority; you all recollect what Cæsar says in his commentaries, "Lacte et carne vivunt;" the inhabitants subsist on flesh and milk. I imagine our modern breed of cows give at least one-third more milk on an average, than those belonging to the ancients, owing to improved breeds and better management. It is not generally known, still it is a fact, that milk is not only a fluid, but likewise a solid; for it no sooner passes our palate, than it comes in contact with the gastric juice of our system, coagulates, and separates into whey and curd, the latter of which is very nutritious to our animal economy, nothing can be more so; as it must be universally admitted by all who have given the subject a thought, that it is the natural food of animals, both of the quadruped and biped species; it is our, and their first food, and occupies middle rank between vegetable and animal diet, being peculiarly adapted to very young, and even old persons requiring nourishing food. It has been known to become acid when used to excess by persons possessing weak constitutions; still this is easily counteracted by the use of a particle of magnesia or soda. I declare milk to be the perfection of diet, and the only substance known to man as containing the three grand alimentary principles of food, namely; the albuminous, oleaginous, and the saccharine, represented by the white of egg, butter and sugar. The curd of milk is principally albumen, the butter oil, and a large percentage sugar; thus you perceive it contains them all.

Nature has therefore given us a substance completely perfect to nourish us in our infancy; and if we were to use nothing else, with perhaps few exceptions, the span of our lives would much exceed four score years and ten?

From what other substance can so great a variety of delicious articles of food be prepared as from milk; I answer without fear of contradiction, *none*, for they are endless; some of them are delightful luxuries, some are food, others drink, some medicinal.

It becomes part and parcel of a great many dishes, and why should it not, when every nation under the sun has been experimenting, and inventing some peculiarity in its preparation of its own, as will appear if recourse be had to the receipt book for cookery.

For instance a dish called curd and cream, is made by removing the whey, and substituting cream. Curd and whey is new milk coagulated by rennet. Clotted cream is fresh drawn milk placed in a vessel and stirred four times a day to prevent the cream separating from the milk, and when the mass coagulates sufficiently to sustain the spoon in an upright position, it is ready for the milk.

Devonshire cream is milk brought almost to the boiling state in shallow vessels over a charcoal fire, and so kept until all the cream rises to the top; when it is used to eat with fruit. Tyre is made by adding buttermilk to fresh milk, and allowed to stand twelve hours, it is a little acid but very fine.

Two parts of fresh sweet milk curd, and one part of fresh butter, well worked together and pressed in a mould sufficiently to slice with a knife, is delightful for breakfast, and will keep for months if packed in a clean vessel, and become well flavored.

There is a very great difference observed in the milk of animals; for example the milk of woman is very much thinner than the milk of the cow; but yields much more saccharine matter, and a larger quantity of cream, still the cream is incapable of producing butter.

Next to human milk comes asses milk; it resembles it very nearly; it has more saccharine matter than cow's milk, and is thinner, with a much larger per centage of curd. It is particularly easy to digest, and is frequently used by consumptive persons, though apt to produce diarrhœa if taken in large quantities; a substance resembling it may be prepared by dissolving four ounces of milk sugar in a quart of skimmed milk from the cow.

Milk from the goat is thicker and much richer than cow's milk. It has a singular aroma, and makes a capital cheese, or delicious white butter; I have eaten it in Italy and the South of France without being able to detect the difference between it and cow's butter.

Ewe's milk is exceedingly like cow's milk. It yields a much larger quantity of cream, and makes more cheese than any other kind of milk, though it contains but a small quantity of sugar. Camel's milk is said to be good. Buffalo's milk is thinner than that of the cow, but very similar to it.

Mare's milk contains a large per centage of sugar, but very little butter.

It is an easy matter to discover how much water milk contains by weighing any given quantity of milk, then place it over a gentle fire until it is evaporated to dryness; this dry matter must be weighed, and the difference in weight between the two, is the loss of water.

If it is further desired to discover the quantity of inorganic saline substance contained in the same, burn the dry milk powder in the open air until its combustible matter has vanished, and weigh the residue.

If you would know the quantity of cheese a given portion of skimmed milk will produce, add vinegar to it, and the curd will immediately separate, this may be collected, pressed in a cloth, dried and weighed.

If you would know how to make the most exquisite butter, it will afford me pleasure to inform you, to wit: permit the calf to draw from the cow, half her usual quantum of milk, and set the balance for cream, the butter this will yield is delicious beyond description.

The milk first drawn is thin, watery and of little value; the second drawing is better; but the strippings are incomparably richer than either; and will give fifteen times more cream. The milk likewise is far richer after the cream has been skimmed off, than the first milk taken from the udder. The first cream that rises after the milk has been placed in the pans, makes far better butter than the after-creamings: the color of the first will be yellow; that of the second white. Cream should be a little sour before churned, and at least an hour and twenty minutes spent churning in summer; and an hour in winter; so that the temperature may be kept equable; if attention is not paid to these minor matters, the butter will be white, oily and soft.

There is still one little matter that requires more attention than 1st, 2d or 3d milk, and without which butter cannot by any chance be made fit to eat; and that is cleanliness, which is indispensable in the manufacture of butter; it is absolutely necessary that the dairy should be well aired, and located remote from any chance of bad odors, cream will absorb them at once, and taint the butter with them. The taste of butter is unlike that of any other fat substance, and is exceedingly agreeable when the cows are fed upon proper food; leguminous plants, clovers, &c., will enable the cow to give milk yielding good cheese; while cereal plants containing oily substances, will favor the production of butter. If the cow eats madder her milk will be blood-red—and if she be fed upon saffron it will be yellow. If attention is not paid while working butter, to extract all the buttermilk, it will spoil in a very short time; if the dairy maid works it too much, it will become tough, resembling glue; and if the cream is warmed before churning, not an uncommon practice, the butter has a tendency to become rancid. The cream that is permitted to rise naturally, without artificial heat, will make the best butter. If it is well made by an experienced person, it will not adhere to the knife when cut.

Butter may be considered the oil of milk separated by agitation, it is unlike animal fats, from the fact that it contains stearin and olein, and in addition thereto butyric acid, to which butter owes its agreeable flavor.

An inferior butter is often made in cheese districts from whey, separated from curd in manufacturing cheese; as the pressing operation is performed, the whey is collected, and allowed to stand about thirty hours, when the scum thrown up is taken off and churned.

Butter is very extensively used not only as food, but in the culinary art, in America, and the northern countries of Europe. But in southern Europe, olive oil, and oils extracted from sundry vegetables, take its place. In tropical climates, where the thermometer ranges between 86° and 96°, butter melts, and consequently, if eaten, it must be in the form of oil. In India, butter is made from the milk of the buffalo, clarified and known by the name of ghee. In Arabia this substance is used as a drink for breakfast.

Beekman states that butter was not used either by the Greeks or Romans in cooking; nor was it brought upon their tables at certain meals, as is the present custom. It is not mentioned by Galen and others of his time as food, though they have spoken of it as applicable to other purposes. No notice is taken of it by Apicius; nor is there anything said of it as food by the authors who treat of agriculture, though they frequently mention oil, cheese, and milk. Butter is seldom made use of in Portugal, Italy or Spain. But in England it has been known and appreciated since the days of her conquerors; who are supposed to have taught her the art of making cheese?—for the manufacture of which she is still famous.

The liquid left after the butter is made is called butter milk. "Parmentier says that it differs from milk principally by the absence of the oily part or butter; and that it retains the salts of milk, sugar and casein." It is exceedingly nourishing, easy of digestion, and may be recommended to invalids. It is a very cooling beverage in summer, and particularly refreshing to laborers in the field; but should not be taken freely when the body is overheated, as it is a refrigerant. When kept for two days it acquires an acid taste, but may still be used with impunity, as its acidity does not increase the acidity of the stomach, neither does it cause flatulence, as vegetable acids are apt to do. A capital dish may be made by putting thick butter milk in a linen cloth, and after the whey has passed through, there will remain a thick mass, which is to be sweetened with loaf sugar, and eaten with cream.

Cheese is prepared from milk by artificial coagulation, separating the cream from the milk. The rennet used to coagulate it as I have before mentioned renders the curd or casein insoluble in water. This casein is identical in constitution with the albumen contained in eggs, or the fibrin of wheat. This is the reason why chemists insist that cheesy matters found in the milk of quadrupeds is derived immediately, and without any subsequent change, from the food on which the animal feeds. The casein contained in milk is the cause of its souring, it has the wonderful property of converting milk into lactic acid. It is this same substance contained in different kinds of meal that causes them after a time to turn sour.

So to form cheese, the curd is separated from the whey, and when kneaded and pressed sufficiently to expel, it wholly becomes cheese.

If this substance be well dried, exposure to atmospheric influences will have no effect upon it; but if moisture is permitted to remain in it, putrefaction destroys it in a very short time; a little salt is necessary in its manufacture to preserve it; cheese is generally colored with marigold, arnotto, &c., which are harmless. It should be kept in a clean dry room, with pure air circulating through it; and the fly known by the name of musca patris, which deposits its eggs in cheese, producing maggots, must be kept out. Cheese analyzed is found to consist of carbon, 59,781; hydrogen 7,428; oxygen, 11,409; nitrogen, 21,381.

It is generally considered a salutary diet for persons enjoying good health, but for weak constitutions it is indigestible. Old cheese prevents injurious effects from the use of fruits that contain acid properties, from the fact that it holds ammonia. You cannot discover the fatness of cheese by its appearance. It is necessary to taste it in order to observe this quality. A cheese devoid of fat when heat is applied to it will dry up. The quality of cheese varies according to the richness of the materials with which it is made. At some dairies it is made of skimmed milk; at others, with entire milk; with new milk mixed with skimmed milk, and with milk combined with cream. If dairymen desire to make a cheese similar in all respects to that imported from Wiltshire, in England, I will here name the receipt which I received from an agriculturist when there in 1833. The whey made from whole milk is gently heated, when the curd and butter will immediately rise to the surface; this is skimmed off, and a green decoction of four portions of sage leaves, two portions of marigold, and one part of parsley are added to it, which gives it its color.

In Switzerland, in 1832, the following receipt for making the far famed Schabzieger cheese was given me by a celebrated cheese maker, to wit: Cheese is made in the ordinary way with skimmed milk, and allowed to dry for six months, when it is ground to a powder, mixed with one-ninth of its weight of pure pulverized salt, and one-eighteenth of the leaves of a plant known there as the trifolium melilotus cerulia, or melilot trefoil; to this added oil or butter sufficient to form a paste, when well kneaded with the hands; the whole mass is then thorougly dried, and pressed into any form.

In Italy I obtained a receipt for making a potato cheese, which is very palatable. Two pounds of sour milk is added to ten pounds of potatoes, well boiled, and salted to suit the taste; the whole is then thoroughly beaten to a pulp, and allowed to stand for five days, when it is again well beaten, and dried in any shape required.

Great care and constant attention in manufacturing cheese are desirable when the milk is warmed at 95°, that is to say, entire milk, to prevent it from becoming singed, in which case the cheese immediately imbibes a burnt taste. To obviate this, I would propose that the prepared milk should be placed in a tin vessel and thrust into a boiler of hot water, and there agitated until the desired temperature is raised. The fire acting immediately upon the water contained in the outer boiler, cannot injure the milk unless it is raised to a very high temperature.

In preparing cheese numerous circumstances must necessarily be considered: such for instance as its treatment in the cheese room; the management of it while in the press; breaking up the curd; preparing the rennet; feeding the cattle which furnish the milk, proper food; the season of the year when made; and the proper materials for coloring; the utensils requisite are a cheese tub, in which to coagulate the milk, and break up the curd; a cheese knife; cheese tongs; vat; cheese cloth; and press to force the whey out of the curd; and finally cheese board on which the cheeses are placed in the cheese room. From the 1st of May until the first of October may be considered the proper season for making the best cheese. Still it may be manufactured through the winter, provided that the cows are properly fed and attended to. The reason has never yet been accounted for why there is so great a difference between the qualities of cheese, not only in different countries but in different counties and districts of the same country.

It is necessary that accurate experiments should be made to discover the circumstances most favorable to its proper manufacture, as very few improvements if any have been made in its preparation for a number of years past. Whatever causes natural differences in milk affects the quality of the cheese prepared from it. If the milk is poor in butter the cheese will be inferior. If the pasture be rich, the milk will yield a large portion of cream, and the cheese will be equally good. If the pasture be such as to affect the taste of the milk, the cream and cheese will partake of the same modification. To keep your cows in health, and enable them to perform their natural avocation, a mixed food is indispensably necessary—for example, sugar or starch to form the carbon lost by respiration, fat or oily matters to add that ingredient to their animal economy; gluten to supply the constant waste of the muscles; phosphates to renew the waste of bone; saline matters and sulphates to replenish the excretions.

Dr. Antisell.—It is a most important matter to know the true condition of milk. Dr. Lyon Playfair supposed that clover and the aftermath gave to milk its greatest amount of cheesy matter. Our great population are deeply concerned in the question of milk. A late law case has drawn out the fact that the swill from the distilleries gives richer milk, and a greater quantity of solid matter, than common country milk. Generally speaking, the solid matter in milk is proportioned to the kind of food. The Swiss have a mode of determining what proportion of water there is in milk. Those who keep cows send their milk to a public establishment, where its quality is tried by a hydrometer, and the results noted in each case. The cows were not so well fed and kept in ancient days as now. Stall fed cows give generally more milk than those which live in the fields. The cow takes very little exercise at any time, if left to her own choice.

Judge Van Wyck.—In that law case, the physicians and butchers reported that some of the cows feeding on the swill became diseased in the stomach, the mouth and feet; that their milk contained more water than country milk, but more cheese. But I am led to the conclusion that the distillery swill is not so injurious to the milk as is generally supposed. Their stables have been in many instances very filthy, to which probably disease may also be attributed. The Scotch use methods much similar to the Johnson stables. They use distilled grains and other matters all boiled together, making what is termed a mash. Cows fed on that give pretty good milk; but cows fed on the Highlands yield a much better quality of milk, and butter of finer flavor, than any of that from lowlands, owing to the different qualities of the plants, the grasses, growing on high or low grounds. Our own highland butter always commands and merits a higher price than our lowland.

Chairman.—The facts just stated are generally conceded. Horses and cattle like it better on the highlands, and I have noticed that when hay from the high was mixed with that from the lowlands, the animals would pick out the highland grass as neatly as fowls pick corn from among buckwheat. When all your highland hay is gone, then, and not before, will your stock eat lowland hay.

Judge Van Wyck.—The cows of Epping forest give the finest butter, bringing the highest price in the London markets. It is sent to market in tubs of 25 lbs. or 50 lbs. each.

Benjamin Pike, Sen.—The best butter in England is from Bedfordshire, from excellent farms made from heath land, on an acre of which a goose would starve to death. The Duke of Bedford restored, or rather made those fine farms.

Dr. Antisell.—Butter from warmed milk is not so good. It would be better to use some chemical agent, rather than heat. Lactic acid has been successfully tried, being mixed with milk before the churning—this is practiced in the vicinity of London. There is no large city, in which there are distilleries, where cows are not fed on the swill and grains.

Mr. Pike.—I saw that stable in 16th street, and I heard the evidence in the law case about it. When I saw that stable, it was very filthy.

Subjects adopted for next meeting—Culture of Madder, and Human food; proposed by Judge Van Wyck. Adj.

H. MEIGS, *Sec'y.*

MEIGS.—USE OF AMMONIA IN AGRICULTURE.

The labors of modern chemists have taught us, (and it is one of their finest discoveries,) that it is to azote that manures owe all their value, and that their fertilizing qualities are exactly in proportion to the quantity which they contain of this agent.

In its simple form of gas it is not always useful, it cannot be absorbed by plants except when combined with hydrogen. Besides it is demonstrated now, that the atmosphere is the grand source from which all vegetables provide themselves with this substance. Hence the great utility of burying certain growing crops in the earth for manure. The leguminous vegetables are particularly valuable for this purpose, and long experience more than the work of science, taught agriculturists to use that particular family of plants to restore the exhausted fertility of their lands. Chemistry, properly so called, did not make that discovery, but it has come in aid of it, to render the practice clear, and to justify a usage so long time ago established.

It results from the researches of many chemists—but particularly of Boussingault and Liebig, that the causes which yield the dose of ammonia to the atmosphere, so indispensable to vegetation, are two. The most direct one is the decomposition of organized bodies, all of which contain more or less of this agent azote. All vegetables have it, but it is particularly condensed in the bodies of animals—it ascends to the air and is dissolved rapidly in the watery vapor with which air is always charged.

The second cause, less studied, and a few years ago its existence not even suspected, is the electric discharges perpetually succeeding one another between or in the beds of atmosphere, in certain regions of the globe, Boussingault and Liebig do not hesitate to proclaim, that the carbonate of ammonia must have existed in the atmosphere previous to the existence of all organized beings.

The phenomena of showers and of storms, all tend to prove these opinions to be true; we know that a series of flashes of lightning passing through humid air, produce a combination of nitric acid and ammonia, and that nitrate of ammonia always accompanies rain; but as this n'trate is in its nature fixed, it cannot sustain itself in the atmosphere as a vapor, besides it is the carbonate of ammonia which is distinguished in the air.

It is at this day, out of all doubt, that the ammoniacal carbonate is the most energetic agent of vegetation.

For practical illustration—within a conservatory of about fifty feet in length, take a piece of carbonate of ammonia, about the size of a walnut, a little moist, rub it either on the heating pipes or on a piece of heated metal, (if the pipes are not hot,) and the odor is instantaneously detached—repeat this at the end and in the middle of the conservatory, and in a few moments the whole mass of air in it will have a sufficient dose. After the plants have for some time breathed this air, syringe them from one end to the other as much as possible like a shower of rain. The aspect of the plants changes for the better, even directly under the eyes, and grow with unusual vigor.

ANNALES DE LA SOCIETÉ CENTRALE DÉ HORTICULTURE, 1850.

[Translated by H. Meigs.]

Report as to a new pea by Mr. Crout, who brought it two years ago, from Berg, where they had no name for it, but they supposed that it came from Russia. A committee consisting of Messrs. Boussiere, Forest and Neumann examined it last August at the Lausage farm at Villejuif.

We think that it must be ranked with the late peas. It is about fifteen days later than our earliest peas. It may be classed as second in ripening. It requires strong pea sticks to bear it up, for it is very vigorous; it reaches more than six feet in height, is of great yield, the pods almost always twins, well filled with large peas pressing in each others sides. When young the peas are of a light, very tender geen color. When dry and old, of a yellowish hue. We tasted them when young and found them although so very large, savoury, melting, marrowy, the pellicle so thin and delicate that it is impalpable under the teeth, and it is very sugary. Its great merit besides its fertility, is that it preserves its juicy and tender character, differing from all others in these respects, for others as they ripen become harder, floury, loose their juices and have a thick skin. Mr. Crout sows them about the last of February and gathers the green crop in June. By sowing every ten or fifteen days, he has them green till frost. We deem it an excellent addition to our stock. It will become a great crop we think, proper to give it the name of Mr. Crout, and therefore name it the gros sucré de Crout, *the great Crout sugar pea.*

AMERICAN INSTITUTE,
Farmers' Club, Feb. 4th, 1851.

HON. JAMES TALLMADGE in the chair.

HENRY MEIGS, Secretary.

R. L. Pell of Pellham, made the following remarks on the subject of madder:

MADDER (*rubia tinctorum.*)

Madder is cultivated principally for dyers. It is a plant of very little beauty, and is more like a weed than anything else; it is a rude, irregular growing plant, the stalks are numerous, square and usually of a reddish color; they are weak, so that in their lower part they touch the ground, and in the upper commonly entangle one with another; the leaves are long and narrow, they stand, six radiating from a joint like the rays of a star. The flowers grow at the tops of the stalks, and are of a pale yellow; the seeds are contained in round heads.

The root which is the useful part is extremely long, and of a beautiful red color; dusky on the surface, but very light within. The soil for madder should be deep and light: or a loamy soil that is rich, and has but a small per centage of clay in its composition is proper, provided it is deep and thoroughly pulverized by sub soil plowing and harrowing. Sets of madder are then to be taken in the spring from the sides and heads of the old roots, and planted by a line one foot apart in the row, the line is then to be moved one and a half feet apart, and another row planted opposite the middle of the first row, one foot apart; then move the line four and a half feet and pursue the same mode of planting, when the sets are all planted in and slightly covered with earth, let the planter go over the ground with a garden rake and make the whole piece level.

If there should be no showers within three days after the sets are planted, they must be watered once, after this nature will take care of them.

When the weeds are two inches high, they must be hoed out, and the ground broken as deep as possible without coming in contact with the madder plants or roots. After this hoeing, the plants are to be left three weeks, when, if necessary, the horse hoe may be used in the four feet openings without any danger of coming in contact with roots. The main downright roots are all that are of value in madder plants. The horizontal or spreading roots that extend themselves near the surface, are to be considered in two distinct lights, as they are either larger or smaller, for at one of these periods they impoverish the main roots, and at the other they feed and nourish them; so that you will readily perceive that at one time they are to be nursed, and at another destroyed.

It is while they are young that they are of advantage to the main root.

When it is found necessary to send the horse hoe a second time, direct the laborer to cut much nearer one row alternately, in order to break off all the large horizontal roots growing on that side; small rootlets will grow on the ends thus broken, and will be of service to the main root again. The hand hoes must hoe and clear off the weeds from the side left by the horse hoe; towards the end of summer the horse hoe must again be called into requisition to cut the horizontal roots on the side left before, which operation will complete the work for the first season.

The seed and flower of madder are of no use in the plantation for commercial purposes, and as the seed would only impoverish the root to bring it to perfection, therefore the stem when forming the flower buds should be cut off sufficiently low to take all the buds; enough of the plant will be left to draw up and circulate the sap, and keep nature in her proper course.

By this means a large quantity of rich juice, intended by nature to perfect the plant to ripeness, will go to the main root; the horizontal roots having been taken off the useful part of the plant will be surprisingly increased, so that in the autumn of the first season the roots will be very strong and greatly increased. As the cold weather approaches the stalks dwindle away and die, and from this period the second season takes its date. Early the following spring, at least two weeks before the plants begin to shoot, the horse hoe should be sent to cut a deep furrow in the centre of every four and a half feet opening, and at the same time the hand hoers must cut up all the weeds that may grow in the partitions; after this operation very little if any care will be necessary, as the growth of the plants will be too strong to suffer any annoyance from weeds.

The four and a half feet intervals will require horse hoeing when the weeds grow, as in the preceding summer, to prevent their further growth, and to give new supplies of nourishing sap to the main roots, as well as to cut off and destroy the horizontal ones. This operation is performed precisely as mentioned for the first season. By this means the crop will increase as it ought in every particular, and this season the whole care will be at an end. In autumn when the plants wither, is the proper time to take up the roots, this must be done with great care and circumspection, for the more they are lacerated and broken in the ground, the more injury accrues to the madder grower, in the loss of roots. The regular method of planting will here be appreciated, by the men employed to take them up, as they will know where to look for them one by one, and where they may, and where they may not work among them.

When the roots are taken from the ground, they must be cleaned and all the dirt taken off, and after a quantity of the best sets are separated for a new plantation, the balance are to be dried for sale. There is do danger but that the dyer will always be a ready and anxious purchaser; nor need the husbandman fear he can over stock the market. The use of the root is to dye purples and red, and as a principal ingredient in numerous other colors; such as madder-orange, madder-yellow, and madder-brown. Some of those who have raised madder, propose keeping it three years in the ground; but they surely had not fairly and exactly tried the difference. It must be allowed, that the roots will give a little the third year, but not comparable to the very great loss and consequent disadvantage of a whole year's time; neither are they so good as the second year? The second autumn is the season when this root has arrived at its perfection, and is, I believe, the most profitable time on all accounts for taking it up.

There are different ways of managing madder roots when taken up, such as stripping off the outer bark, then the second bark, and so selling it in three forms, to wit: the rind, the flesh, and the fibre. I would advise the farmer to dry it, and sell it entire?

The Secretary read from Ure's Dictionary of Arts, &c., vol. 2, page 792, the following:

"In a memoir published by the Society of Mulhausen, in Sept. 1835, some interesting experiments upon the growth of madders in factitious soils, are related by Messrs. Kæchlin, Persoz and Schlumberger.

A patch of ground was prepared containing from 50 to 80 per cent. of chalky matter, and nearly one-fifth of its bulk of good horse-dung. Slips of Alsace and of Avignon madders were planted in March, 1834, and a part of the roots were reaped in November following. These roots, although of only six months' growth, produced tolerably *fast* dyes, nor was any difference observable between the Alsace and the Avignon species; while similar slips or cuttings planted in a natural non-calcareous soil, along side of the others, yielded roots which gave *fugitive* dyes. Others were planted in the soil of Palud, transported from Avignon, which contains more than *ninety per cent.* of carbonate of lime, and they produced roots that gave still faster dyes than the preceding. *Three years* are requisite to give the full calcareous impregnation to the indigenous madders of Avignon."

Silk is seldom dyed with madder, because cochineal affords brighter tints. The most brilliant and fastest madder red, is the Turkey or Adrianople. Wool alumed, takes in the madder bath a red color, which is not so bright as the cochineal red, but it is faster and far cheaper. The British soldier's coats are so dyed.

In consequence of the Société Industrielle of Mulhausen, having offered in the year 1826 large premiums for the investigation of madder, many competitors appeared, but the premiums were renewed to obtain more knowledge of madder; 2,000 francs were offered. Haussmann, of Colmar, first discovered that adding *chalk* to the dye bath he produced beautiful and solid reds."

We possess the books and it is well to quote all that is useful or agreeable, for the benefit of those who have neither the books nor the time to study them. Like Smithson we wish to diffuse knowledge among men according to the charter under which this Institute exists.

Judge Van Wyck.—I believe that the shortest time in which madder will require (in our State and those more northerly) to make fast colors, will be four years—perhaps three may do it. In reference to the value of it as a crop, considering the ready and increasing market for it, I have no doubt that it will long continue to reward the careful cultivator of it. It must be done on soils either naturally or artificially rich, as has been remarked at the club recently. Show it to be profitable, and our farmers will take it up.

Gen. Chandler presented a sample of ground madder.

Gen. Chandler.—Here is a specimen of madder, grown by Mr. Gilyam, on Long Island. Mr. G. has been engaged in the cultivation of this plant in Holland, and is undoubtedly well acquainted with it, with the most suitable soil, and the proper method of bringing the plant to perfection, as well as the most approved mode of preparing it for the market. This specimen is the growth of two years, and Mr. Gilyam says he can produce 3000 pounds per acre, at a cost not exceeding 3 cents a pound. If this be so, it is very certain that it would be a most profitable crop, as its price in our market ranges from ten to fifteen cents a pound.

It is difficult to determine, from the published statistics of importation at the present time, the annual value of the import of this article. In 1836, I understand, it amounted to between 2 and 3,000,000 dollars. The consumption has undoubtedly more than doubled since that time. It is certainly very remarkable, that with an abundance of soil well adapted to its cultivation, with a vast amount of agricultural labor annually bestowed on uncertain and unprofitable crops, so little attention has been paid to madder. It appears to me that it can only be attributed to a want of knowledge as to the proper mode of its cultivation and preparation. I have no doubt, Mr. President, that the exhibition of one successful crop would soon be followed by the production of a supply sufficient to meet the demands of our own market. That it will eventually be done, there can be very little doubt, and the period can only be hastened by the dissemination of every species of information relative to its culture.

Allow me to remark, that one of the qualities of madder, which much enhances its price, is the production of that peculiarly brilliant color called Turkey red. Madder grown in soils which are deficient in alkaline matter as a constituent, it is said, will not produce this color; nor is it so certain in producing what are termed *fast colors* of any kind, as that which is grown in soils where alkaline substances abound. I cannot at this moment give you my authority for these statements, nor is it important. The condition and quality of vegetable dyes, undoubtedly, to a certain extent, depend on some one or more constituents of the soil in which they are grown, and these constitute the peculiar virtue which render them most valuable.

Benjamin Pike, Sen'r.—Mr. Heaton of Herkimer county, has raised madder there for about seven years past. He finds that in the fourth year madder is worth sixty per cent more than in any less time. I think that Mr. Heaton raises two thousand pounds an acre.

Judg Van Wyck.—England has raised some of it, but has found it cheaper to import than to raise it; she has not land to spare from her more necessary vegetable crops.

President Tallmadge.—I will submit a few remarks. Our knowledge is much in our books; the information given in Ure's work is very valuable. We owe obligations to Mr. Pell for gathering and giving us knowledge. I had an opportunity at Avignon to study the subject of madder. The dyes of nature are produced from minerals in soils, so are the colors of madder; one soil contains some element which causes it to be yellow—a different soil gives red madder. Take a muck soil and make it richer by amendment and manure, you will obtain peculiar colors. Original native soils containing lime, silex, &c., may suit madder. Calcareous matter is indispensable. I have recently remarked, that the rich alluvial bottoms of our river valleys, would be found highly favorable to its growth, and ninety-nine times in an hundred, these alluvials will be found good for madder. They are soils made by nature in the most perfect and admirable manner. A continent is swept by the torrents which carry off to deposit on the banks of our great rivers, all the ingredients, organic and inorganic existing in a range of several thousand miles. This alluvium is annual, and the heat of our brilliant summer dries them so as to admit of annual culture. Other countries are troubled with permanent morasses, we have scarcely any. By close investigation, I believe we shall discover methods of perfecting madder in the shortest time. This is of great importance, that the fields wanted for other crops, may not be so long occupied by the madder.

The dye of madder of one year's growth is poor. In the second year it has been recommended by some experienced men—but in the third and fourth years it is at its greatest perfection and begins to lessen in value, for it then commences to take a woody character without increase of size or quantity of dye, or improvement in its quality. Our import of this article, was about three million of dollars worth in 1836; from our growth since that time, I suppose the import must have quadrupled, and must go on to increase with increased rapidity to keep pace with our works and our population. If we can show our country the importance of growing it, it will soon be produced, not only sufficient for our manufactures, but for any amount of exportation. Our cotton doubles in a short period, and demands the relative growth of madder. And in truth, we are bound in duty to ourselves to produce every thing essential to thorough independence. England has long forbidden under civil penalties, the exportation of certain of her raw productions, and has given all encouragement to other nations to bring to her their raw materials, that she may have the very great profit of their manufacture. In reference to the study of madder which is yet not fully understood, we must invoke the powers of chemistry in the investigation. Let it be proved to be a profitable crop, and our countrymen will readily give ample supplies for our commerce as well as our home manufactures. Let public feeling be raised, and they will find more than we can gather on the subject.

Gen. Chandler observed that the well known Turkey red is said to be produced in madder by the alkali in the soils, yielding the color just in proportion to its presence in them.

Judge Van Wyck.—Calcareous matter is now well known to be necessary in soil, in order to give vigorous growth as well as color to madder.

Benjamin Pike, Sen.—I have raised madder on my Jersey farm, in order that I might have that among other useful plants. Where can we obtain the seeds?

President Tallmadge.—The Institute will find the seeds. The agent is now requested to provide them for distribution. Our next subject is Human Food.

Mr. Meigs.—We are pleased to see among us Captain Robinson, of Newburgh, who brought the Carp from England several years ago—thus conferring a great benefit upon his country by adding a fish before that unknown in our waters.

Capt. Robinson.—I brought the Carp from France about seven years ago, put them into our Hudson river, and obtained protection for them from our Legislature, which passed a law imposing a fine of fifty dollars for destroying one of them. I put in Gold Fish at the same time. Now some of these Carps will weigh two pounds, and some of the Gold Fish, which are a species of the Carp, are quite large, some of them being pure silvery white. Both kinds are multiplying rapidly.

Mr. Meigs gave the following brief history of these fishes: Cyprinus Carpio, the common Carp, and Cyprinus Auratus, Gold Fish. Carp—olive green, yellowish beneath, oval and dorsal spines, strong and denticulated. Carp, brought to England in 1814, was naturalized in Germany and Sweden about 1564. The Gold fish originated in a lake near Mount Tsienking, in the province of the Kiang, 30° lat., China. Carp may be carried in wet cloth, with a small piece of bread steeped in brandy in his mouth, considerable distance to other ponds. Carp taken occasionally in the Volga are five feet long; in some places it has attained forty pounds weight.

President Tallmadge confirmed the statement as to the growth of the Gold fish, some of which had been found recently of about the size of herrings, and that they abound in a bay near Wappinger's creek, near his country seat at New Hamburgh.

Gen. Chandler moved a postponement, to the next meeting, of the subject of Human Food.

President Tallmadge, after alluding to the growing importance of flax, and the methods now under investigation for such preparations of it as will render it capable of being wrought by our present cotton mills, proposed that it be the next subject of consideration by the Club, and I wish also that, for the twenty-fourth annual fair, next October, proper discretionary premiums may be offered for the Flax.

Judge Van Wyck moved that Flax be the exclusive subject for next meeting.

The Club then participated in tasting the fine yellow Fall Pippin apples from the Pellham farm, presented by Vice-President Pell, and the Crom, the Snow apple, and the House or Pound apple, presented by Judge R. S. Livingston, also the French *Bon Chretien* Pear, presented by the Secretary, which was pronounced inferior to several of our own pears.

EXPERIMENT IN CULTIVATING WHEAT.

176 *West* 13*th street*, *N. Y.*, 3*d Feb'y.* 1851.

My Dear Brother—Some time in September last, (as I think,) the following paragraph signed Agricola, was cut by our Brother

Berry from the Sussex Express, published at Lewes; and I beg you will permit me to place it in your hands for careful investigation, that it may be published here as truth by the "American Institute" of this city, that body having urged me to write.

"In a small tour through a portion of Essex, I passed the Colnes, and was much pleased with a piece of experimental farming that has now been carried on for seven years by Mr. J. D. Piper, of Colne Engine. This gentleman long since, had a conviction that wheat would flourish best in solid soils, and that on ground which was comparatively undisturbed; this crop might be grown for many successive years without fallowing. He determined to try the experiment, and has now grown on the same piece of land, six successive crops of wheat, without on any occasion allowing a plough to turn over a single furrow. The soil in fact has not been disturbed by plough, spade, or any other implement, the only thing used has been a hoe, and this has not be employed to loosen the soil, but only to remove the surface weeds."

"The course has been to reap the wheat with a short stubble, and to let that remain in the ground; to hoe off the surface weeds and burn them; and then to dibble in seed between the old stubble, to the extent of a peck and a half per acre, the rows being one foot apart. The average product of the last five years wheat crops, under this system of farming, has been ten coombs and two bushels (forty-two bushel) per acre. At the present moment, there is standing upon the same piece of undisturbed land, the sixth successive crop of wheat, and truly it is a noble piece of grain, the straw being remarkably good, and the ears being very large, full and heavy; the crop will be at least eleven coombs per acre. Many farmers would suppose that the land must be very foul; this however, is not the case, there is scarcely a weed to be seen."

"I ascertained that Mr. Piper expended in labor, about £4 10s. per acre, but notwithstanding this heavy outlay, and all other charges of rent, tithe, a top dressing of sixty bushels of soot per acre, &c., the clear profit on an acre amounted to six guineas, not a bad return, considering that the corn was sold in free trade times, for I am now alluding to the crop of 1849. These facts may seem strange, they are, however true, and any one who doubts them, may visit the spot and have them abundantly demonstrated." AGRICOLA.

Questions for Answer.

In what condition was the land, how cropped and manured in the three last years immediately preceding the experiment?

What area is thus used?

What is the surface soil; as sand, clay, loam, gravel?

What is the subsoil?

Is the land plain, or in stetches or lands, and of what size?

How many grains dropped in each hole, and how deep?

What kind of wheat?

When is land seeded?

Is there a strenuous endeavor to obtain a very strong plant before winter; how may we date that time?

Are we to understand the dibbling is distant one foot between the rows, and also along each row, i. e. one foot square?

Could not a horse hoe, or cultivator, or broad share plough, supercede the hand hoe, and save much of that expense?

If when the weeds are hoed off and burned before dibbling, what guide has the dibbler to direct the planting in the intervals between the late rows; for we suppose the fires would not spare the stubble of the past crop when destroying the weeds by fire?

Why may not bone dust, or guano, or dry wood ashes alternate with soot sometimes, where soot may be scarce?

Cannot the horse dibbling machine, executing three acres a day, be substituted for the expensive hand dibble?

What is the land most like, of that which we have both known at Ringmer, Henfield or Lambourne, or all of them; if you think it best to endeavor to describe them all, that I may possibly remember *even one of them*?

Is the land inert or very active by reason of its heaving or fermenting quality, as by marl &c?

Your residence at Maplestead Hall, will doubtless facilitate the investigation, and you will oblige many, very many by undertaking it. Your affectionate brother,

OB'H. ELLIOT.

The Club then adjourned.

H. MEIGS, *Sec'y.*

AMERICAN INSTITUTE,
Farmers' Club, Feb. 25, 1851.

THE GROWTH AND CULTIVATION OF FLAX IN THE UNITED STATES.

Mr. R. T. UNDERHILL, of Croton Point, in the chair.

H. MEIGS, Esq., Secretary.

The Chairman announced that flax was the exclusive subject for discussion, and proceeded to remark that the form of the fibre of flax is round, while that of cotton is flat. These facts are shown by high magnifying powers. Flax, when finely prepared, feels much like silk, and makes a splendid and delightful cloth, cool, a great conductor of heat, susceptible of the finest and fastest dyes, of superior durability, and suitable to the largest portions of the globe—the warm and the temperate regions. We must apply our genius to the question of rendering it as cheap as cotton, for it will grow in vast regions where cotton cannot, and if we do not hasten, the world will soon be before us in garments of fine linen. It would be a great triumph for us, if we can set the world the example of supplying mankind, by machinery, with it, as cheap as cotton. A vast new field of industry will be opened for us, and our rapidly growing population require it, and all new avenues for prosperous progress.

The flax fibre, combined with cotton, wool, or with silk, increases greatly their durability and strength. Formerly we raised large quantities of flax-seed for export. Now, so low is the price, our farmers give up raising it; but, as the price is rising now, it will be more extensively cultivated. We must use both the stalk and seed, if we can. It is said that the fibre is more delicate if the flax be pulled before the seed is matured.

President Tallmadge remarked that this subject is one which has assumed peculiar importance, and I beg to submit a few remarks upon it. Flax now presents itself, as probably capable of being manufactured by machinery, like cotton, so as to become cheap and common, like that, and as linen spinning and weaving mills are in expectation, as patents already appear in England, to Claussen and to Doland, for such machinery, we must now try our strength. *Fas est ab hoste doceri*—it is lawful to learn from our rivals. It stands us in hand to look about us, instead of occupying our time with politics and office seeking. We look out for the far-searching rivalry of England, seen in all parts of the earth, with her experimental farms, seeking for cotton growing climates and soils, and every other raw material to which she can apply her mechanism, and head the world by it. It is true, that as yet we grow cotton better than almost any portion of the globe. We have about two-thirds of all our lands which can yield cotton; but flax is congenial to all the civilized world, reaching far north and far south. Flax may soon become a competitor with, or superior to, cotton. I wish to awaken my country from its lethargy on this subject. Let the Institute commence by awarding suitable premiums; let it call on the State and on the general government to take the matter up and excite to immediate action. France, in the days of Napoleon's prosperity, offered a premium of one million of francs for the spinning of flax by machinery like that of cotton.

The flax grower has two objects—one is the fibre, and the other the seed. For raising the seed, follow the books: plough deep, in rich and well manured soils; sow thin, in order that the flax may branch out well and yield much and good seed. If you plant for the fibre, a less rich soil sown thickly, gives a single stem slender and of a finer fabric. Some say that if you go for a crop of seed, you may as well give up all hope of the fibre. Some men, as old as I am, will recollect the great quantity of flax seed formerly exported; while now I see, by last year's report, the United States exported only about four thousand dollars worth. In 1815, our exports had already fallen below a million of bushels. When flax is grown, then comes the hard and costly labor of pulling it by hand. That will no longer answer for us; it is not fit for our people. I will not permit, if I can help it, an American citizen to toil for Chinese wages, of a cent a day, or any of the low pauper wages of other countries; but if we can apply genius to the work—give almost life to engines—pull, spin, and weave the flax with machine power, at the low price of cotton, I am for it, with all my heart and all my zeal.

The Chairman said, I am told that flax has already been reaped like wheat.

President Tallmadge continued—In the sowing of flax seed, we have, in one important point, been ahead of Europe—that is, in our mode of rolling it. In the best methods of rotting, separating the fibre, &c., we have not made a beginning—steeping in hot water vats; in cold water; stagnant unwholesome water; dew rotting, &c. I merely wish to call public notice to all this, to stimulate inquiry; for England, at this moment, boasts of having patented better methods, which perform the work of weeks, or months, in a few hours. I do not yet believe that this has been accomplished; but I am persuaded that she desires to forestall our inventions, and make us think it unnecessary for us to try to invent what she has already discovered; and when we succeed, she will then claim them as hers. I urge my countrymen to proceed with inventions.

About 20 years ago, Mr. Anthony Dey, a respectable member of the New-York bar, proclaimed an invention of magnitude, to dispense with rotting, by crackling flax dry, to obtain the pure fibre. He was, so far, entirely successful; but after cloth was made of it, of seeming purity and excellence, the cloth being placed in a closet, turned of a dark color, and it was found rotting and ruined. Here was a mysterious acetous fermentation, hitherto unsuspected. That which would have been taken out by the old plans of rotting, now came out as existing in the fibre, the destroyer of the woven linen, by mildew and mould. Mr. Dey's loss, by this failure, from this cause, was about twenty thousand dollars. Chemistry is to be called upon in this work; let her now step forward to aid in this vast movement, or be ejected.

From the seed, we have the oil cake which we send to England to fatten cattle there. It is good for that; but when tried upon cows, the effect of the oil on the milk is as if lamp oil had been spilled in the milk pail. This effect is perceived when the cow has eaten the oil cake two days.

Our imports of linen, in 1849, exceeded eight millions of dollars. This should be home production, and stop the importation. In order to lull us into quiet, England says she has mixed flax with cotton successfully, by cutting the fibre of the former to short lengths; but I must believe that when so cut, there will be obtuse heads and points to it, and its strength thereby vitiated. But we must do the work by machinery. Some say that pounding the flax renders it finer and softer, and more fit for spinning. Suffice it to say, the long flax fibre has required human fingers to spin it. We have lately seen a wonderful machine—Hoe's printing press—delivering, in one hour, with a speed almost beyond observance, twenty thousand copies of the Sun newspaper, using its nerves and fingers with superhuman accuracy, as well as velocity. Here is evidence of what can be done by machinery. Who shall doubt the ability of American genius to invent equal powers for other purposes? Should we succeed in spinning and weaving flax as we now do cotton, we may have even Egypt and the world at our feet. Within my memory, our flax seed was of such a character as to induce England to come here for the most she required, even in her dear Ireland, for growing her flax, because her own seed would not answer. She went, also, to Riga for seed.

By her conduct towards us, at an early day, she put us into the school of adversity, and it turned out to be the best college for all other purposes she could have sent us to. Her restrictions against our commerce and our industry taught us the love of liberty. It was persecution and the fires of Smithfield which learned us the wisdom and the value of toleration. If we had been cherished by her like rich men's sons, we should have proved the usual fate of men too tenderly dealt with. It was well for us to have been educated in that school of adversity. We already see in our approaching manhood, what a constitution we have received—what a position among the powerful nations we have already obtained. France has been some 1,500 years in arriving at her position in the civilized world, and Britain about ten or twelve hundred years in gaining her attitude, while the United States, fresh from the school of adversity, has in only seventy years gained her place among the nations of the earth.

The flax plant gives a certain parasite (I don't mean a political one) a chance to climb its stem, which the parasite always avails himself of. I mean the slender weed called the "flax dodd," which engrafts itself in the stem, and injures both fibre and seed. This was in the flax of Riga, Holland, &c., while we had it not. Our seed was, therefore best; so that any quality of which we then carried to England was welcome, which has since been countervailed, and the trade is gone. McCulloch, in 1838, said that England spun a flax-thread out of one pound of the fibre, to the length of 11,170 yards, while in 1814, it had been spun but 3,330 yards. The finer thread goes to Brussels and Paris, to make lace and fine work. In like manner, iron, when manufactured into hair-springs for watches, yields a value of $250,000 from one pound of iron, worth ten cents. Such are the immeasurable advantages of skill and workmanship over and above the humble raw material. It is our business to supplant her in all this work here at home. To protect her labor she resorted to cruel punishments, in order to prevent the export of any raw material which could be made more valuable by the art or industry of her own people. For the export of a fleece of wool, her statutes ordered the victim of this policy to imprisonment or the pillory for the first offence; to lose the right hand for the second; and to the gallows for a third. I hope and trust that it never will be our lot to imitate her in such enactments.

Besides an appeal to the powers of chemistry in relation to flax, we call for powerful and thorough microscopic examination. It is said that the stems are covered with minute scales—that the fibre is round, is joined by gluten, and is formed of separate parts, about as long as the fibre of cotton, lapped one on another; and it is believed that these may be separated, so that then they can be perfectly well spun by our present cotton mills. Let all this be searched out. If success should reward our labor, then shall we be in possession of a fabric worth a thousand times more than silk, giving a beautiful, strong, and smooth dress for all mankind, at the low price of cotton goods, which must then take a second rank, and thereby, with a staple universal in its production, render us independent in all circumstances.

In the cultivation of flax, weeds have been found to grow up with it in some regions, thus requiring the planter to go upon his knees to weed them out, or spoil his crop of flax. We must provide against so great an evil, by using either new lands, or a well cultivated field after a clean crop. We must have no kneeling except to the Creator of all things. In our land we have seen weeding done in the flax field. Our beautiful sunshine days are all on the side of our farmer. England would give us a patent for only a sight of one of them, in the place of her rain and fog. I mean that we shall bring flax into the market of the world pure, free from mineral stains, and in a style of growth and ul timate manufacture, which will place our country at the head in this matter as she soon may be in others. And I will not omit saying, that our colleges, must now apply their science—their chemistry—to this great work, or withdraw their pretensions to useful learning; and we of this Institute must not only exert all our powers, but if need be, pray to Hercules for help!—that is, apply to the government of this State and that of the United States, for their co-operation and aid.

The result maintained by the speaker was, that flax is congenial to the soil and climate of every acre of our extended country.

Its Productions.—For seed, oil, &c., for fibre, fabrics, &c.

Preparation—Rotting.—1st by steeping in hot water; 2d, by steeping in cold brook water, 3d, by steeping in pool, stagnant water; 4th, by dew rotting; 5th, by chemical process, new method not yet established.

Manufacture—To crackle, to dress by machinery; to spin by machine labor; to weave by machine labor.

The spinning and weaving to be by machinery equivalent to the manufacture of cotton.

President Tallmadge then moved the following resolution

Resolved, That the Farmers' Club recommend and desire the American Institute to provide and offer premium to be awarded discretionary, in whole or in part, for material, new and essential advances and improvements in the culture, preparation, spinning and weaving of flax by labor-saving machinery.

Judge Van Wyck said: In the olden time we used to cultivate flax, for it was essential to our household industry; all well ordered farms had then as much flax grown as supplied the needed thread and linen for the family, and soon it was found that our flax seed was so good as to be in large demand for exportation; and now, notwithstanding the prevalence of cotton fabrics, we all continue to admire its beauty, durability, and capacity to receive and hold fast all dyes. In this, and in many other respects, it is superior to cotton, and also even to silk. I trust that our Yankee ingenuity will make it, and make it cheap; and I hope that American tea will also soon appear.

Mr. R. L. Pell, of Pellham, moved that the subject of flax be continued. Carried.

Mr. Ellsworth, late Commissioner of Patents.—While I am working on my little two thousand acre farm in the West, I often think of your American Institute with feelings of pleasure in its useful labors. I am only able to say a few words on the subject before you, for I am on my way home, and have but a few minutes to spare. But, sir, I have the evidence here in my power, that we can supply flax cheaper than cotton. I have tried it on our prairies. We make first a fence around the fields—we do it for $110 per mile, and so durable a fence, as yet, has not been made elsewhere. We run two deep furrows to put the bottom of our posts in; these posts incline to each other at an angle. We place side rails on one side of these angular posts; we turn the furrows back again on the feet of the posts. We place our corn stalks, when that is the crop, leaning against these fences, and thus a shelter is formed for our stock. We plough with a beam nine feet long, supported in front by two wheels. We have no weeds the first year, and flax subdues them afterwards. We get ten to fifteen bushels of flax-seed per acre. We mow it with a horse-power machine. We sow a field with barley and flax in equal parts. Barley grows tallest—both ripen at the same time. We separate the seeds by sieves which let one kind pass and stop the other. It will not be long before the travel from us to you, will enable us to bring you our oxen in four days; and besides them, turkeys, venison, mutton, &c., &c. We will give you most excellent food, and very cheap, too. I have here specimens of fibre from China grass, which is like floss silk. Kellogg, of New-Hampshire, is preparing flax for cotton mills to spin this year. We admire the rich colors and durability of these specimens before us. The rotting of flax is to be perfect and rapid. We make good paper out of rye straw. Our land can now be bought—next to mine—for sixty-eight cents per acre! I had a hoe once for mixing mortar there. I had no other use for it, and now I have none, for it has been stolen. As for the flax, we are obliged to throw that away as yet, all we keep being the seed.

Mr. Abraham Levy, of the Institute, brought from Montreal, presented to the Institute by the Honorable Moses J. Hays, President of the Agricultural Society, apples from his Metcalf farm; seeds of a Canadian pumpkin which weighed two hundred and seventy-eight pounds; black barley from seeds from Abyssinia, and a specimen of water-proof cloth of Montreal, called *pannus corium*, or leather cloth.

Messrs. Crane & Rice, of San Francisco, California, presented a potato from the farm of Mr. Fuller, of Oregon, weighing three and a half pounds. It measures at the largest circumference twenty-three and a half inches, is of a reddish brown color, is in sound condition, and is said to be excellent, and it is said that it is common to find potatoes there and in California, of similar magnitude.

The Hays apples were tasted by the Club, and adjudged very good. Seeds were distributed among the members. The subject of flax, and also the large potato, were ordered to lie on the table, until the next meeting of the Club.

After voting thanks to several gentlemen, the Club then adjourned.

AMERICAN INSTITUTE,
Farmers' Club, March 4, 1851.

CULTURE AND PREPARATION OF FLAX AND HEMP.

PRESIDENT TALLMADGE, in the chair.

HENRY MEIGS, Secretary.

Vice President Pell, of Pellham, remarked that next to flax, hemp, (cannabis sativa) may be mentioned. It is pretty generally imagined to be of eastern origin, and considered too tender to be naturalized in European countries. It belongs to the nettle tribe of plants, order, *urticeæ*, which are spread over the world. It produces its male and female flowers on different plants, which has some influence on its management and cultivation. In countries where the soil, climate and cultivation is adapted to its requirements, it is not uncommon to find it growing fifteen feet high, and producing a fibre of great strength and beauty. The manner of cultivating it, and its use, is almost the same as flax, and like that plant, when grown for seed, it is a great exhauster of the ground, but if pulled green for commercial purposes, it leaves the earth in far better tilth and much cleaner than flax. It enjoys another valuable property, which is to preserve from the ravages of insects any description of crop that it may encircle.

Hemp requires a far richer soil than flax—a deep rich loam, containing a very large per centage of decomposed vegetable matter, suits it best; the richer the land the stronger will be the fibre. I think a well prepared muck soil will be found best adapted to its wants. It may succeed corn, and it will leave the soil well prepared for the succeeding crop, whatever it may be. The farmer must bear in mind that hemp is readily injured by frost in spring, and therefore it should not, on any account, be sown before the tenth day of May. It must be sown broad-cast, and from two to three bushels per acre. If the land is richly and properly prepared, and the seed is heavy and of a bright color, after cultivation will be entirely unnecessary, as its exceedingly rapid growth will soon overshadow and destroy any weeds that may attempt to grow in its vicinity. The seed selected for sowing must be bright, heavy, and fresh, or it will not grow to satisfy the agriculturist. The crop is pulled up exactly like flax. When it is intended for the fibre only, it should be pulled while in flower, without making any distinction between female and male plants. The general plan has been to pull the male plants, when the seed in the female show that they have effected their purpose, as it is grown for seed and fibre at the same time. The female plants take 37 days to ripen their seed, and consequently must be pulled that length of time after the males. Therefore it is that the treatment of hemp differs from all other cultivated plants, from the fact that male and female flowers are borne on different plants—a singular peculiarity, certainly. The seed on the female plant is found in tufts growing along the stem, among leaves of quite a considerable size. The male, on the other hand, is divided into numerous branches, terminating in very slender spikes, bearing purple clusters of delicate flowers, pendent from the leaves. When the female plants have perfected their seeds, they are pulled up, bound into sheaves, and stooked until entirely dry, when the seeds are readily threshed out. Hemp is spread upon the grass and treated the same as flax. Sometimes the female plants are stacked and kept until the ensuing spring, that the seed may be perfectly cured.

If the weather is warm, from six to eight days in water will soften the external covering of the stem of the hemp so that it will rub off readily. It then undergoes the final operation of bruising, when it is ready for market. An acre of properly cultivated hemp will usually yield seven hundred pounds. An acre cultivated for seed will generally produce from ten to thirteen bushels.

Hemp of the finer sorts is manufactured into a valuable kind of cloth of very great durability, possessing more strength than linens of the same quality, which improve their color by wearing, a property not possessed by linen. It is very extensively used likewise for towels, table cloths, &c., and coarser kinds for cordage and canvas, for which purpose it is eminently useful on account of the great elasticity of its fibre; more than one hundred and eighty thousand pounds of rough hemp is required in the cordage, rigging and sails of a first-rate man-of-war. I think England will depend upon New-Zealand for her hemps—that climate suits its growth to a charm. An acre in New-Zealand will produce thirteen tons of fresh cut plants, which, when dried, will yield two and a half tons of hemp fit for ropemakers, and six tons of coarse tow fit for ropes of inferior quality, and coarse canvas.

Flax (linum usitatissimum) is a plant growing to the height of about two feet two or three inches, with a smooth, slender, hollow stalk; the stem divides into numerous branches, terminated by beautiful, shining, veined flowers, to which seed pods succeed about as large as a pea, each of which contain ten small seeds filled with an oily meal; the leaves are sharp-pointed, narrow and long. Flax is cultivated more or less in all European countries, but can only be brought to full perfection in a rich, deep, moist soil, of a loamy nature, containing much vegetable matter in its composition. Strong clay soils, or dry gravelly soils, do not answer well for flax. If the soil is made too rich by the application of manures it will grow luxuriantly and yield a coarse fibre; and if it be too poor the produce will be unremunerative. Alluvial soils are peculiarly adapted to its culture and will grow the most valuable crops, as is instanced in Holland, where the soil is nearly all of an alluvial formation. This plant may be grown at a great elevation above the level of the sea if the soil is favorable to it—in fact it enjoys a free circulation of air, which prevents mildew.

Flax should be grown in the rotation of cropping, soon after the ground has been plowed from grass; sometimes it will do well as the first crop after grass, particularly on a clover lea; it may succeed oats if the land is in good cultivation, and reduced to fine tilth, devoid of weeds, &c.

Land prepared for flax varies according to the previous crop. When it has been grass, one plowing will be all sufficient, particularly if the ground is well harrowed before the seed is sown. When flax is to be sown after a corn crop, or oats, I would plow the field immediately after the corn is taken off in the fall, that it may be exposed to the effects of frost, and pulverized thoroughly for the reception of the seeds; two plowings and two harrowings in the spring will effect this object. After the seed is sown broadcast, harrowed and cross-harrowed, I would roll the ground once with a light roller. The quantity of seed sown must depend on the object you have in cultivating the plant. If for commercial purposes, it should be sown thick, say three bushels to the acre, when it will grow tall and produce a fine fibre. If sown thin it spreads, grows low, and throws out side branches, yielding large quantities of seed, plump, heavy and well filled. Seed for sowing should be obtained from Holland, as that is held in the highest estimation, ripening sooner, and yielding larger crops. The same seed should not be used in the same district repeatedly, as the plant will inevitably degenerate by such a process. The seed from Holland is superior to ours for the reason that they pay more attention to ripening and preparing it. Notwithstanding the Hollanders cannot, and never have been surpassed by any other people in the world in the cultivation of flax, still they consider it necessary to change the seed once in every three or four years, and usually obtain it from Riga. This seed, when sown in Holland, grows coarse and bulky the first year, consequently they permit it to perfect seed, which is sown the second year, and the produce of this sowing they keep for themselves, knowing that it yields the finest flax, and worth double as much as the seed of the third crop, which last is never used by themselves, but exported to foreign markets. Our agriculturists might import from Riga direct, and follow the Dutchman's rule of management, making the seed of one crop worth twice as much as the next. If we were to pay the same attention, and take the same pains as they do, we should most certainly equal them in quality, as our soil and climate are equal to theirs.

It is of vast importance to the farmer to know how to judge good seed from bad. This knowledge is easily obtained; seed proper for cultivation should be bright, smooth and very slippery, and more than this, it must be plump and heavy enough to sink in water. The interior, when broken open, should present a yellowish green appearance, and taste sweet and oily. All other seeds are unfit for sowing, and will only disappoint the agriculturist.

When the plants are four inches high, it will be necessary to weed them once thoroughly, and it must be well performed, as they cannot be weeded after this period without much difficulty and injury to the fibre. If the object of the farmer is to produce seeds from a crop for sowing, or food for animals, it is essential that the plants should be allowed to ripen perfectly. If, on the other hand, fibre is the desired object, the flax must be pulled in a green state. It should never be pulled while damp, as the bark will in that case be injured by the hand in the operation. If any portion of the crop lodge before it is ripe, it must be taken out immediately, and kept by itself. Each portion of the field should be pulled as it ripens sufficiently, and the balance left until fit. When pulled it must be assorted with great care; the coarse, the fine, the short, the long, must be kept in separate bunches by themselves. This matter is neglected by our people, but the most devoted attention is paid to it in Holland; therefore their superiority is thus accounted for.

When the crop is pulled the plants are bound in sheaves and set up in stooks similar to corn. We now desire to obtain the fibre, and must, to accomplish the object, destroy the interior portion of the stem and leave the fibre free from injury. This may be accomplished in several ways; one is to place the bundles in soft stagnant water and there allow them to steep; in a few days the inner matter rots by fermentation; before decomposition reaches the fibre the bundles must be withdrawn. They are now exceedingly offensive, and injurious to the health of those engaged in the operation, not unfrequently causing fevers, &c., Some flax growers place their bundles in running water instead of stagnant, in which case it will require many weeks to rot the gummy mucilaginous matter which holds the fibres together; the fibres, however, will be stronger than by the first process; others spread the flax upon grass for about six weeks, when the action of the rain and dew will effect the same object and yield a much stronger fibre than either of the other processes. Good flax should be fine, soft as silk, glistening, long and of a silver grey color.

In dressing flax, the first operation is to separate the fibre from the core. This is now very expeditiously accomplished by machinery, instead of the brake formerly made use of. If the whole of the wood is not taken out, it will be necessary to scrape it in small parcels on the knee with a dull knife.

Hackling is the next operation to be performed. The hackle is composed of steel teeth 4 or 5 inches long, made fast to a bench. A lock of flax is then drawn across the tops of these. This operation can likewise be performed by machinery. The hackle must be modified according to the kind of cloth to be made; whether cambric, linen, or lawn. The spinning of flax by machinery was for years considered next to impossible, and it is but very lately that they have succeeded in spinning it advantageously. The machinery is necessarily more complicated than for wool or cotton. The manufacturers of Leeds were the first to effect this important object.

They form the flax first into what they call roving; and after that into yarn; and in spinning this they are obliged to pass it through water, which wets the spinner's clothes, and is consequently unpleasant. They divide a pound of flax into a certain number of hanks—and the number of hanks gives the commercial name to the number of the thread. Low numbers are made use of for sacking and sail cloth; from twenty to forty for sheeting, table cloths, &c.; from sixty to one hundred for fine linens; and from one hundred and twenty-five to two hundred for cambrics.

Linen is the principal fabric manufactured from flax, and is principally made use of for shirts, sheets, table-cloths, napkins, &c. The fineness of the quality of linen is determined by the length of the staple in a certain weight, and from the number of threads found within a certain space of the weaving reed; the evenness of the thread and the closeness of the texture determines the value of linen; the surface should present to the eye a glossy appearance of a perfectly white color. Without a magnifying glass it is difficult to judge linen to a nicety, as the gloss may be produced by starch. It is safer to buy undressed, rather than dressed linen. Linens come to us from abroad under various names, such as Irish, Scotch and English. Dowlas linen is exceedingly strong and made for shirts. Drill is twilled linen made for pantaloons. Linens generally made use of for sheeting are mixed with cotton, and are called Irish and Union Irish. Then there is the Lancashire linen, Union Lancashire, Russia, Imitation Scotch, Barnsley, Yorkshire, &c. There are also unbleached linens, brown Holland, Silesia, brown damask, linen damask, diapers, dorsock, huckaback, tick. We have also the intensely fine linen fabrics, called cambric, possessing a most beautiful silky appearance.

The average produce of an acre of flax when prepared for market, in soil perfectly adapted to its culture, may be put down at about six hundred weight. If grown for seed, ten bushels may be considered a good yield. If well ripened, five bushels may be selected for sowing, and the other five bruised for oil, which is much used by painters. The refuse is called oil cake, and is very extensively used for fattening cattle. If I were in the habit of raising flax, the seed should be fed on the farm, in which case it could not be considered an exhausting crop, but if sold it is most decidedly so.

It is as food for stock exceedingly nutritious, and may be fed advantageously to all kinds of animals; you may feed it to calves instead of milk; to horses and cattle mixed with bran, crushed oats, or cut hay, which they relish sufficiently to improve their condition with great rapidity, and at the same time operate as a cure for costiveness and inflammation.

Notwithstanding all the advantages that can be brought forward in favor of flax culture, I for one am fully determined not to raise it on account of the disadvantages in its cultivation that I can name, to wit:

1st. It is most assuredly an exhausting crop.

2d. Much labor and manure is required in the preparation of the land.

3d. Much attention is necessary at the season of pulling, as different parts of the same field ripens at different periods.

4th. Great care and judgment must be shown in the selection of proper seed, as on this point rests the chief success of the crop.

5th. The value of the fibre, and its consequent profit, depend upon the mode of watering it. If the putrefactive process is proceeded with too far, the fibrous, and also the mucilaginous part of the bark will be affected.

6th. If it remains a few hours too long in the water, the fibre will be weak and brittle; and if three hours too short, it will not separate from the stem easily, and will consequently be coarse.

7th. Endemic fevers are always more or less common in flax districts.

8th. It is a very hazardous crop, as there is always great variation in the market value; sometimes it bears a high price, and at other times is scarcely remunerative. These objections do not apply to our Western alluvial soils, that can be purchased for one dollar per acre, and that will yield a succession of crops annually for some years without manure—but to those like mine, that have been under cultivation for more than a century, and which do require manuring for a crop.

Recent discoveries have been made in England in the manufacture of flax, which that government thinks will enable Great Britain to declare herself entirely independent of our Southern States for her raw material, cotton. Chevalier Claussen has discovered a mode of operating immediately upon the flax as it comes from the field, or upon the fibre after it has been cleared by mechanical means from the woody portions of the plant, making a more entire separation of the resinous substance than by the modes now in use in this country, such as dew rotting, &c., aforementioned, which require some weeks. Mr. Claussen, by means of chemistry, is said to accomplish this desirable end, without deteriorating the material, in less than three hours. He gets rid of the elasticity and harshness of the fibres by splitting them into strips, until their gravity is less than that of cotton, and appear exceedingly like it. By this process flax may be grown and manufactured as cheap, if not cheaper, than cotton.

By the old process, cotton would take precedence. Eleven pounds of cotton, worth 88 cents, may be spun to produce 20,000 yards, about 3,800 yards more than eleven pounds of flax would yield. The manufacturer could afford to sell the cotton yarn for ten and a half pence per pound, when he could not sell the flax yarn for less than seventeen and a half pence per pound. By Mr. Claussen's process, however, the tables are turned. He increases the produce of flax 99 per cent. over the old mode, and it is supposed to a much greater extent.

It has another very decided advantage, which is that the flax may remain standing until entirely ripe, yielding its seed, &c., as the riper and coarser it is, the better.

News by the last steamer from Europe informs us that cloth has been recently manufactured in Great Britain, fifty-four inches wide, of good quality, composed of wool and flax. They likewise make cloth of cotton, one-half flax, and a quarter cotton, and the balance flax. A Manchester editor asserts that doubts have been expressed whether cotton and flax mixed would receive a uniform dye. He says he has seen samples of the yarn dyed, and that the colors were uniform, perfect and in every way unexceptionable. So early as 1783, the British Government offered bounties for the growth of flax. In 1785, there was imported from Russia, in British ships, 17,695 tons.

It is said that pure flax fibre, equal to the finest cotton yarns, have been produced upon cotton machinery now existing.

The consumption of cotton last year in Manchester alone was more than 770,000,000 of pounds—equal to one thousand tons per day. The conclusion the Manchester manufacturers have come to, as the result of their experiments, is that flax may be substituted for one-half, at least, of this enormous quantity; and in order to supply the Manchester manufacturers to this extent, the produce of two thousand acres of flax would be required daily, which would equal seven hundred thousand acres per annum.

I will venture to assert that the whole amount of flax grown in Ireland, Scotland, England and Wales, does not amount to one-sixth of that quantity. In my opinion, if flax takes the place of cotton to a great extent, England will look to our rich alluvial western lands for her main supply of the raw material. I trust our western agriculturists will take into consideration the immense importance of these discoveries in a national point of view, if they believe them all, which I must confess I do not.

A few days since, at Paterson, New-Jersey, an English gentleman, carrying on the manufacture of linen, informed me that he had united cotton with flax, and in his attempt had most signally failed, from the fact that cotton and flax are so entirely different in their nature, that they will not receive the dye uniformly, and, therefore, in combination will not produce a fine fabric. Here are two samples prepared by the gentleman in question and presented to me; the fine, well colored, uniform piece, is made from pure flax; the light colored, coarse grained piece, is one-third cotton and two-thirds flax. If the English have not been more successful in their attempts, and I do not believe they have, our southern friends have nothing to fear.

Mr. Scott, the gentleman alluded to, further informed me that a friend of his in England hired three hundred acres of land, for which he paid eight pounds (or forty dollars) per acre—twelve thousand dollars per annum—and raised upon it nothing but flax; and furthermore, that it paid him. This surprised me; but when he stated that a manufacturer in Paterson imported his flax from England, and paid there forty dollars per ton for it, my surprise was changed to mortification, to think that a people possessing millions of acres of virgin soil, capable of yielding a crop of flax annually for fifteen years in succession, without manure or other aid, should import flax grown upon foreign soil that had been under cultivation for centuries, and which had to be manured and enriched at great cost to produce anything.

The increase in the consumption of foreign flax in the Kingdom of Great Britain has been from 936,000 cwt., in 1831, to 1,800,000 cwt. in 1849, and at the present time the spinners are not able to meet the demands for yarn. The value of flax they imported in 1849 was more than £4,500,000, and flax seed equal in value to £1,388,131; oil cake, £644,175; hemp, 45,000 tons, worth

£1,600,000. The sum total of all these imports exceeded £8,000,000, or forty millions of dollars. England exported in 1832, 49,500,000 yards of linen; in 1849, 106,000,000 of yards, having more than doubled. There are now in Manchester eighty persons engaged in the manufacture and sale of linen yarns. They sell 100,000 bundles of tow and linen yarns every month in Manchester, worth £35,000, and the trade is increasing.

David Gavin Scott, of Paterson, New-Jersey.—I have been for some years practically concerned in the manufacture and dyeing of flax, both in Scotland and this country. It is a subject deeply interesting. This Institute will use the power given to it so as to concentrate here as in a grand focus, every light, every ray of useful knowledge, and hence radiate it to the most distant regions, even to the shores of the Pacific Ocean.

Flax was early introduced into England, but increased but slowly. It went to Ireland in about 1750. Alarmed at the progress of the Irish in the woolen trade, the British Parliament addressed a petition to William III. that he would stop that, and let the Irish take to raising and working flax. William promised that he would do all that he could. England ordered that all the Irish woolens should be exported to England only. The linen business of Ireland grew and prospered in the north of Ireland—not so in the south—and the cry of famine which came across the waters to us, recently, was all from the south, where flax and linen did not prosper. England gave premiums and bounties on the linens of Ireland. Protecting this industry on a lofty scale it thrived; but more in Scotland than in Ireland, for since 1815 the city of Dundee has become in linen almost equal to Manchester in cotton. In 1850 Dundee spun and wove forty-five thousand tons of flax This amount had the effect of cheapening linen goods. Scotland is using power looms. Last year two hundred million pounds weight of flax were used in Great Britain. The English farmers are aroused. Last year they produced fifty millions of pounds weight, or what was equal to about one-third of the cotton import. Russia has given to England about sixty per cent. of the flax she imports. In New-York flax is now worth eight cents a pound. Cloth of pure flax is worth fifty cents a yard.

The preparation of flax has been made an unhealthy business, on account of the old practice of steeping it in stagnant waters containing great quantities of vegetable matter rotting in them. One of the methods I have seen tried was soaking the flax in hot water containing soap, which loosens the fibres in a few hours. All the methods tried have for their object only the loosening the fibre of flax from the central core. The next part of the process is to effect the separation. This is done in numerous ways, but in the most complete manner by a mill in which the stalks are crushed beneath a heavy stone. The crushed core is then separated from the fibres. This is called scutching, and there are numerous modes in use for doing this, but it is most commonly done by fixing a number of scutches in the same axle worked by machinery.

The fibres are at length separated from the central core; the flax has now become a marketable article ready for the manufacturer's hand.

After the flax has been plucked in the field, it is carried off to be macerated or steeped in water. The object of the maceration (which is performed in every country where flax is produced) for the purpose of manufacturing, is to separate the substance of the stalk from the rind or barky portion, which consists of fibres, the common mode of effecting which is thus: when the flax is gathered it is bound in small bundles and thus deposited in a pond, bundle after bundle, until a solid stratum of flax is formed. When it has been piled to such a thickness that the depth of the water will admit, no more, (generally about five or six feet) the whole mass is loaded with large masses of heavy wood until it is all completely immersed.

When it has remained in this state from *five to eight days*, it is taken out and conveyed to a place of mown grass or clean sward land. The bundles are here untied and carefully spread out stem by stem. Here it remains *five or six weeks*, being frequently turned in the interim; all is then gathered and tied up in large bundles, conveyed to a store and kept dry till wanted.

The object of this soaking in water, is to render the fibres easily separated from the centre core. The great obstacle in the flax industry is the tedious and expensive preparation of it for the spindle and loom. Donelan says now that by his new patent process, he can prepare it for one cent a pound, by chemical and mechanical processes combined, and that the flax is, at the same time *bleached!* One ounce of fact is worth a ton of theory. If Donelan's patent can do this, no man can estimate the importance of it to agriculture. There is another invention just now, in England, that of the Chevalier Claussen, whose patent method prepares flax in short staple, similar to that of cotton. He can obtain it also from the China grass, from hemp, from old tarred ropes and from bamboo. I do not believe in his success. Large associations are now formed and forming in Ireland and Scotland; in the latter country (mine) we are not apt to be *tickled* with new inventions.

One of the noblemen of Ireland has a grand plan to secure food for the people. In one establishment at Rochdale I saw about fourteen hundred flax looms at work; they used one-third cotton with two-thirds flax. I have no great confidence in the value of that sort of cloth; I do not consider it durable nor worth more than one-half of a fabric made of pure flax. I here show you examples of my own manufacture; one of which is called in Rochdale *union goods*, of cotton warp and flax filling. I sell for ten and one-half cents a yard; the other, pure flax, for twenty cents a yard. The union goods are not, in my opinion, worth putting on your back. In dry spinning we use the fibre nearly five feet in length; in wet spinning, of the fibres cut into short lengths, we make indifferent cloth, not saleable. The Chevalier's mode of making short staple of flax will make poor linen! I perhaps bear hard on the Chevalier; yet such are modern discoveries, how can we place boundaries to progress?

When flax shall become a great crop, as is very probable, how beautiful will be the scene of great fields of it in lovely bloom—for its flower is truly so. What admirable increase of comfort, of enjoyment to all men in the use of soft, yet strong, the clean and silk-like flax, as white as snow. Some persons seem to fear that these new uses of flax will injure, by competition, our worthy growers of cotton. I have no fear of that. The fine cotton of our southern States will forever bear competition with any fibre? Each plant has its peculiar character—both must be had, and there never will be any rivalship between them. The competition will be a rich reward for both, and the true glory of the flax farmer and the cotton planter will be clothing the world with beautiful and cheap garments. Such triumphs as these make the only true glory of man! Oh! how far beyond his triumphs in war.

Mr. Meigs stated that Mr. Hyde, who has just arrived from England, says that a Mr. Wright, a native of this country, but for the last forty years resident in England, has patented a method, now in operation, consisting of boilers of great strength, in one of which about two thousand pounds weight of flax is placed, and steam from the other boiler is forced among the flax. After some hours, two alkalies are forced into the flax; at the same time, hot water is forced in, and at last, all water being expelled from the flax, hot air is forced in. The alkalies, with hot water and steam, dissolve the gum or resin, and dissolve the silex, which rendered the flax harsh; and thus, in twelve hours from the beginning of the operation, the flax comes out soft and pure.

Mr. Scott observed that the bleaching of it is the greatest expense.

Mr. Carter described methods of rotting flax in holes made for that purpose, about five feet deep. The quality of the water used is of some importonce. After the flax has been taken out, the water and mud left in these holes is very rich manure, and flax enriches the land on which it has been spread.

W. Blakeslee, of Waterbury.—I have raised flax for 40 years. As to the water employed there is some mystery about it. An attempt was made in Middletown many years ago, to manage flax dry, but it failed. Connecticut has a soil well adapted to raising it. A hard pan not far below the surface soil is good for flax. I have made a clear profit of sixty dollars on an acre of flax, some years ago. It does exhaust the soil—yet it will not grow well more than *one year in seven* on the same spot, and manure will not help this. The oily matter of flax is not helped by the manure. I have had on an acre seventeen bushels of the seed and four hundred pounds weight of flax. I sowed three pecks an acre (of good seed.) My flax usually grew about three feet high. I soon found that our oil was adulterated, for I have sold my oil to dealers who sold it ten cents a gallon less than they gave me. The market for it is quite fluctuating. We all know the value of the oil-cake for cattle-feed. As we could not here compete with adulteration, and at the same time with the flax of the West, our business has gone down.

Mr. Pell.—It is well known that flax requires the eleven ingredients which are necessary to grow good wheat—less in the proportions of some of them. But flax does no injury to the soil if it is cropped before going to seed. In the seven years interval mentioned by Mr. Blakeslee, the ingredients are restored to the soil. The grain crops occupy the land eleven months; the flax only six months.

Mr. Blakeslee.—Spread flax over a piece of ground to be dew-rotted, and that ground will not grow flax for seven years.

Mr. Pell.—Plants throw off excrementitious matter, which is good for different plants, but bad for their own species. Trees, as the pines, will hardly succeed each other.

Mr. Carter.—Flax dew-rotted is more easily dressed than by water-rotting; but the *upper* and *lower* stalks differ in quality, which is not the case in water-rotted flax.

Mr. Fleet asked Mr. Scott what was his opinion as to flax injuring soil; for some persons have gone so far as to say that it ameliorates it!

Mr. Scott.—I think that flax is exhausting, and not only for its own growth but also for the growth of other plants.

Judge Van Wyck observed that it was universally so considered when the flax went to seed, but not otherwise. Our farmers pursued the same mode of cultivation of it sixty or seventy years ago that we do now. I have known sixteen to twenty bushels of seed to come from one acre, and the seed sowed was something less than a bushel. In Europe they have some better methods in managing flax than we have. I entirely approve the views of members to-day, of the immense importance of this subject to the human race.

Mr. Blakeslee.—Land is always better off after a proper rotation of crops. Now we get more grain after flax than we do after oats. When we air flax in water-rotting, we hasten the rotting considerably—lifting the flax and letting the air in for a while, and then putting under water again, and so repeating the operation a few times; this may be done by draining off the water and then letting it on again, where situations will allow it.

President Tallmadge.—In this discussion we should aim to arrive at practical results. We must instantly dismiss all manner of theory which fails us in that. This is a great question, the first division of which belongs to the growing the staple—and here analysis has recently taught us the very ingredients in soils required for various plants, one of which demands more or less than other of those indispensable elements. One result of this knowledge is the confirmation of great facts, partially heretofore known, in relation to the importance—the necessity of rotation of crops—more rapid in horticulture than in agriculture, being required in three to five years in the former. And in the forest how striking are the evidences of a grand rotation, where the pine trees of ages being removed, other trees of different kinds take their places for a long period. And we cannot fail, in following out the principle, to remark that Divine Providence has ordained immense rotations in all things. Cast your eye upon our world. See the growth of masses of men, and their cities, in their orders of rotation—growing, ripening and decaying. See Babylon, Baalbec, Persepolis, Carthage. In some cases even the *ruins* of their magnificence can hardly be found. So that in the rotation of plants in our garden we behold the type of the great rotations of man. And so of all vegetable and animal life. While these forms rise, glitter, and pass away, the great elements of air and earth are constantly restored from exhaustion to health and fertility.

Mr. Blakeslee.—Let us discuss the subject of stock at the first meeting of the Club in May. Adopted.

Flax is to be continued at the second meeting in March.

The Club adjourned. H. MEIGS, *Sec'y.*

AMERICAN INSTITUTE,
Farmers' Club, March 18th, 1851.

FLAX, HEMP, AND COTTON.

Hon. ROBERT SWIFT LIVINGSTON in the chair.

HENRY MEIGS, Secretary.

Mr. Meigs read the proceedings of the Weekly Council of the Royal Agricultural Society of England.

Royal Agricultural Society of England.

At the Weekly Council of the Society, held on Wednesday, February 12th, Mr. M'Dermott read the following paper:

REASONS IN FAVOR OF AN EXTENDED CULTIVATION OF FLAX AND HEMP IN THE UNITED KINGDOM.

My object, gentlemen, in reading the present paper, at the request of your esteemed Chairman, is to submit to you, and through you to the great agricultural body of England, a few facts bearing on the importance which, in a national and individual point of view, would result from a more extensive cultivation of fibrous plants in this country. In venturing humbly to submit these facts and opinions to so important and influential a body of gentlemen as those who compose the Council of the Royal Agricultural Society, I am far from wishing it to be understood either that I conceive them to be ignorant of many of the facts which I shall have occasion to adduce, or that the subject of Flax culture is one to which they have not already paid some considerable attention. On the contrary, many of the valuable reports of your Society, and the prizes given for Essays on the subject, prove that it has at various times engrossed your consideration, and formed the theme of serious deliberation at your Councils. Markets comparatively undeveloped; ignorance of the true character and structure of the plant; prevalence of modes of cultivation and preparation of the fibre, wasteful and injurious in themselves, and attended with an enormous amount of trouble to the grower, have hitherto each had their weight in inducing your Society to withhold its valuable recommendation in favor of an extension of Flax culture.

The progress of science, and the skill and enterprise displayed by many of the agriculturists of England and Ireland, have, however, now placed the matter upon a perfectly different footing, and upon one which I venture to submit should induce the Royal Agricultural Society, in the most strenuous manner, to urge upon the farmers of the United Kingdom, the propriety of immediately devoting some portion of their land to the culture of Flax.

Climate and Soil of England suited to its Growth.—That Flax *can* be produced in this country is a point upon which I apprehend little doubt now exists; and it is unnecessary for me, especially before such a body as that which I now have the honor of addressing, to argue such a question. Suffice it, therefore, upon this point, to say, that in many respects our climate is better adapted for its growth than even Belgium, inasmuch as we are not subject to those severe droughts which, occuring in the spring in that country, frequently inflict very serious damage upon the young crop. Flax is grown, to some extent, in almost every part of the United Kingdom—it has been grown with success upon an Irish bog, and in the fen districts of England—on the summit of the Wicklow mountains, and upon the Beacon-hill of Norfolk, in the midland counties of England and the western shores of Galway and Mayo, upon rich and poor, clayey, gravelly, alluvial, and every variety of soil.

Importance attached to Growth of Flax by Government.—This suitability of our climate and soil to the production of Flax, and the importance which in earlier times was attached to it, is sufficiently evinced by the numerous legislative measures which at various times, from the reign of Henry VIII. to that of George III., have been passed in order to promote and encourage its growth. The "Transactions of the Board of Agriculture" for 1742, contain a letter from Robert Somerville, Esq., of the East Lothian, in which the writer regrets, notwithstanding these encouragements and the bounties offered by the liberality of the Government, that the cultivation of Flax should then have been so extremely limited, and the management in every stage, both of its culture and manufacture, so very detective.

"This," he says, "is the most to be regretted, as there can be but little doubt that immense quantities might be raised in Britain with little labor, and that, too, upon soils where hardly anything else will grow. The accomplishment of an object so truly desirable as that of the extended cultivation of Flax, would be attended with the most salutary effects, by affording employment for an increased population, and materially lessening *our dependance upon foreign countries.*

Oil-Cake.—Upwards of 70,000 tons of oil-cake are annually imported, the value of which exceeds £500,000, the whole of which might be produced by our agriculturists with the most perfect ease, and with profit and advantage to themselves. In connection with our supply of foreign oil-cake, it is worthy of remark, that by far the larger proportions are sent from those countries which are the largest exporters of cattle to this country. By the almost total neglect of the cultivation of flax, our farmers are thus placed in the anomalous position of *dependence upon those countries* for the supply of food for their cattle, which compete with them in our markets, and in several instances, we are actually compelled, in addition to the price set upon the cake, to pay a considerable duty imposed by the government of the exporting countries.

Flax-seed for Crushing.—From *Russia* we import annually half a million of quarters of flax-seed, the value of which is upwards of a million sterling. Our total imports of flax-seed for sowing and crushing, from all countries in round numbers, are about 650,000 quarters, the value of which at the low price of 7s. per bushel, is £1,820,000. There is no reason whatever, why this large sum might not be annually saved to the pockets of our agriculturists, nor why the makers of linseed oil should not be supplied exclusively with home-grown seed for the purpose of their manufacture. The cultivation of flax at home, *if only for seed*, would render our oil-pressers independent for their supply upon foreign countries, and would give to our agriculturists a return of upwards of £2,000,000 annually. It would also give them an article more valuable for cattle-food than the oil-cake purchased from foreign countries, and which consists of the mere refuse and husks which remain after the expression of the oleaginous properties from the seed; or if it should be prefered by some still to use cake, the seed could be sold to the "oil-presser," and the grower might fatten his cattle upon cake produced from home-grown instead of from foreign linseed.

SOWING SEED.—With an increased cultivation of flax at home, we should also be spared the dependence upon foreign countries for our supply of seed for sowing purposes, and which we now import to the value of some £200,000 per annum; for it is absurd to suppose that flax can be only grown in this country from foreign seed; the reason for this opinion being, no doubt, traceable to the prevalent mode of pulling the flax before fully ripe.

MANUFACTURES.—Passing on, however, from the agricultural demand which exists for the production of the crop in the shape of *seed*, I will now call your attention to the existing market and the sources of supply for the *fibre* of the plant required in our manufactures. It cannot fail to be a matter of deep regret to every well-wisher of his country, that in the two main branches of our textile manufactures, we are so completely dependent for the supply of the raw material upon foreign countries. Our cotton manufacturers absorb *daily one thousand tons* of cotton wool, the produce of foreign countries alone. For our supply of cotton, we must, no doubt, still continue to be dependent upon foreign countries, inasmuch as the material cannot be produced *at home*, but there is every reason to believe that by the adaptation of flax to cotton machinery this extent of dependence will in future be considerably less than it has hitherto been, provided our agriculturists will but come forward in earnest, and endeavor to supply the new demand for their products thus created. Our linen and other manufactures in which flax is employed, are all but completely dependent upon foreign countries for their supply; and of the 100,000 tons now annually consumed, not more than one-fourth is produced in this country. The total value of the flax fibre imported for manufacturing into linen, sail cloths, tarpaulings, rick covers, sacking, and other materials exceeds £5,000,000 annually; and there is no doubt, judging from the rapid progress of our manufactures, that if the supply of the raw material could be more readily obtained at home, the consumption would be increased to a still greater extent. The progress of the linen trade, in consequence of the great improvements which have been made in machinery, has, within the last twenty years, been almost unparalleled. The exports of linen, have increased since that time from 50,000,000 to 105,000,000 of yards, and its declared value from £1,700,000 to upwards of £3,000,000. No attempt whatever, has been made on the part of our agriculturists to meet the enormous and rapid increase in the demand for the raw material; and as a consequence, the foreign producer has been reaping a golden harvest from the monopoly which he has possessed. The imports of foreign flax have increased from 936,000 cwt. in 1831, to 1,800,000 in 1842. The value of the increased imports being not less than *two millions and a half*, nearly the whole of which is paid for in money sent out of the country.

Hemp.—We also import large quantities of hemp, which might, like flax, be easily and profitably grown at home. The value of the hemp annually imported is about £1,500,000. We have thus a demand existing for flax and hemp, and for the supply of which we are dependent upon foreign countries, shown in round numbers by the following figures:

Flax fibre	£5,000,000
Seed for crushing	1,800,000
sowing	200,000
oil-cake	600,000
hemp	1,500,000
	£9,100,000

New Markets.—Hitherto we have spoken only of the *existing markets*; I am now anxious to call your attention to that great demand which will be opened by my discovery of the mode of adapting flax to cotton and woolen machinery. The substitution of flax for cotton is now no longer a matter of doubt. Recent experiments at Rochdale have completely set that question at rest. Important as may be the considerations connected at present with the linen manufactures, and cogent as may be the arguments deduced from them, in order to induce you to obtain possession of the ground now occupied by the foreign producer—infinitely more important, and far more forcible, are those which may be drawn from the prospective demand now springing up in our cotton manufactures. The consumption of the raw material must of necessity be governed by the machinery which exists for its manufacture, and the spindles of Belfast, of Dundee, and of Leeds, are already supplied with the produce of foreign countries. Not so, however, with respect to flax and its adaptation to the cotton manufactures. Millions of cotton spindles are ready at once to take to the new material and spin it for you, without the slightest alteration being required in their arrangement. A thousand tons of cotton daily, or 770,000,000 of lbs. annually, are consumed in our cotton manufactures, and the result of my recent experiments has been such as to show that flax may be substituted for one-half at least of this amount. In order, therefore, to supply the *new demand* for a *new material* thus created, the produce of 2,000 acres will be required for each day, and the whole of the flax grown in the United Kingdom does not amount to more than one-seventh of the supply required for Manchester alone. It is a duty imperative upon the agriculturists of the country to endeavor to meet this enormous demand, and not to allow it to pass into the hands of foreign countries, which will inevitably be the case, if they do not immediately exert themselves in this respect.

WOOL.—But not Manchester alone, but the woolen districts of England, await with anxiety an increased supply of flax which shall be available for the purpose of spinning in combination with wool, upon the existing wool machinery. I will not trouble you with statistics upon the subject of our woolen manufactures. The populatian of Leeds, Bradford, and other towns in the woolen districts, are kept in a state of prosperity by the employment which it affords; and the introduction of flax into that particular branch of manufactures would have the effect of reducing the price of material by 25 per cent., and of giving an increased amount of employment in those districts. A firm in Bradford has already taken steps to carry on the manufacture, and will alone require the produce of 5,000 acres in the ensuing year.

DEFICIENT SUPPLY OF COTTON.—In connection with the supply of the markets already referred to, a further argument is to be found in the fact of the present diminished supply of the raw material from foreign countries. "There is," says Mr. Porter, in his remarks on the statistics of the cotton trade, in a paper read before the British Association last year, "a growing opinion that now, and for some years past, we have reached the maximum supply of cotton from the United States—a fact which, should it prove to be correct, makes it a matter of absolute necessity, either to seek for further supplies of the article from other sources, or to find some efficient substitute that shall provide the means of employment for our continually growing numbers." So great has been the deficiency of cotton in the United States during the past year, that the prices have risen cent. per cent. as compared with those of 1849, and our manufacturers are straining every nerve to endeavor to obtain an additional supply of cotton, and to reduce their dependence upon the United States for a supply of their staple article. The Manchester Chamber of Commerce, feeling the importance of the subject, have, at a considerable expense, sent a gentleman to India for the purpose of obtaining information as to the probable extent to which they might depend upon that country for an increased supply of cotton. But to realize this much desired benefit there must be introduced into India a totally new system of managing this crop, and new and convenient modes of transit for bringing the produce of the interior down to the coast for shipment. Those acquainted with the habits and prejudices of the people of that country need hardly to be told with what difficulty such a change would be brought about, and how many years must elapse before the establishment of railways, or the formation of roads for the conveyance of the material produced under such an altered system. So far, then, as the arguments for an extended growth of flax in this country, founded upon the present position of our cotton manufacturers, are concerned, our agriculturists have to consider the diminished supply and increased price of cotton; the difficulty of obtaining the requisite supplies from other countries; and, above all, the fact that flax can be advantageously employed as a substitute in those manufactures in which cotton is required.

Deficiency of Flax.—If we again trust to the position of our linen manufactures, it will be found that there exists in that branch also a most extraordinary deficiency in the supply of the raw material. In Ireland the cultivation of flax has fallen during the past year, as compared with 1845, by nearly 60,000 acres. In Russia, from whence we derive our largest supplies, there has been a decrease in the amount of exports of flax of nearly 150,000 "poods," or about twenty per cent; and I find in the *Morning Chronicle*, which has devoted much attention to the subject of an extension of the growth of flax, a circular of one of the largest houses in St. Petersburgh in which the following statement occurs:—

"We are to have a small supply of flax next season, *not above one-half* of that which we had two years ago, and such high prices are consequently paying in the interior, that the dealers will not be able to lay it down here, to cost less abroad, that it is now selling for on your side; so that we are not likely to have anything doing on contract for a long time, if at all this winter, unless the relative state of the two markets experience mutual alteration by an improvement on your side."

In Belgium, where the finest qualities of flax are produced, the cultivation of flax is considerably less than on the average of former years.

OBJECTIONS TO GROWTH OF FLAX: AGRICULTURE.—But if satisfied that ample markets exist for the sale of his produce, and that this sort of moral impediment to its growth has been removed, the agriculturist may still point to the objections entertained against the growth of flax, both on account of its supposed exhaustive character, and the trouble, risk, and expense attendant upon its preparation for market, as reasons why he should not enter upon the cultivation of the plant. With respect to the exhaustive character of the plant, and its consequent injurious effects upon the soil, there appears to be no reason for supposing that, under a proper and judicious mode of treatment, it is more exhaustive or injurious than any other seed-producing crop. An examination of the stem of the plant shows that those portions of it which are required for the purpose of manufacture, are derived almost exclusively from the atmosphere. Indeed, to so small an extent do the organic properties of the soil enter into the fibre, that it has been found upon analysis that 100 lbs. does not contain upon an average more than 2 lbs. of mineral matters, including lime, magnesia, oxide of iron, carbonic, phosphoric, sulphuric acid, and silica. It is the woody parts of the plant, the resinous matter of the seed, with its capsules and husks, which absorb from the soil the phosphoric acid and other fertilizing ingredients. If the flax, unlike other crops, be not allowed to return anything to the soil; if the seed be thrown into the steep-pit or "rottery" with the stem of the plant, and food for the cattle, the straw or woody parts be rendered perfectly useless for all the purposes of manure, or mixing with cattle food, then undoubtedly flax, like any other crop, would be in *itself* an exhausting crop. But practical experience, however, has fully proved that under a judicious mode of treatment, so far from being an exhaustive, flax is actually a renovating crop. Numerous instances might be cited upon this subject. Mr. Edmonds, of Stonehouse, near Plymouth, stated in 1848: "It is a mistaken opinion that hemp and flax impoverish the land; from *long experience* I have found the contrary; these are crops that make a *greater return as to manure than any corn crop.*"

Sir Richard O'Donnell, who is one of the largest cultivators of flax in Ireland, and who has grown to the extent of 700 acres in one year, states in the *Morning Chronicle*, "As the result of many years' experience, that when grown in its regular rotation, flax is so far from being exhaustive, that it tends greatly to improve the soil and the character of the other crops in the rotation. It is above all most valuable for laying down land after wheat or oats, as the process of pulling the flax, by loosening the earth around the roots, improves greatly the quality of the grass crop."

Mr. Warnes, whose exertions as a practical agriculturist, to promote the extension of flax culture, are deserving of all praise, and whose system of agriculture rests upon the growth of flax, and the fattening of cattle in boxes, upon the seed, incorporated with the other produce of the farm, both summer and winter, has introduced the flax plant into every rotation upon his farm: and judging from the results of his own experience, he states that no rational assertion can now be urged against the growth of flax, as the improved systems of cultivation and preparation have rendered obsolete the clauses in old leases, prohibiting the culture of the plant, and the antiquated notion that fibre and seed cannot be secured at the same time. So far, therefore, as the exhaustive character of the plant is concerned, there appears to be no sufficient ground for entertaining such an opinion.

PREPARATION FOR MARKET.—A farther objection to the growth of flax is, however, to be found in the nature of the process hitherto required to be employed previous to its preparation for market. So long as it shall continue to be considered necessary for the grower to embark in the present troublesome and uncertain process of steeping the Flax in the straw, it will be in vain to expect any very general or extensive growth of the plant. Although considerable advance has no doubt been been made in the preparation of the fibre during the last few years, still the present mode is far from being suitable to the great body of the farmers of the United Kingdom.

DEW ROTTING.—Under the system of preparing the flax hitherto, four modes of steeping or rotting the plant are resorted to. The first consists of the plan of " dew rotting," or allowing the flax to remain exposed on grass land for a considerable number of days exposed to the action of the rain and dews, and atmosphere. The plan, however, is one which, from its obvious inconveniences, is not calculated to meet with general approval in the present advanced state of agriculture, and is indeed very rarely adopted.

STEEPING IN STREAMS.—Probably the best mode of steeping the flax is that of placing it in running streams, according to the mode adopted in Courtrai, the principal flax-producing district of Belgium. The flax so prepared generally realizes a much higher price than any other description of flax. There are, however, certain peculiarities in the water of the river Lys which makes it admirably adapted for steeping purposes, and which are not possessed by any other streams in this country. Independent of the peculiarities of the water, the steeping of flax in running streams cannot be made generally available in this country, as they are mostly too rapid in their character.

STEEPING IN PITS.—In the absence of suitable streams, recourse is had to a mode of steeping in pits or pools sunk in the ground.

But so many favorable conditions are required to be obtained, and so many unfavorable ones to be avoided, in the selection of the site for the pool, and the supply of the water required, that it is probable that a desirable or perfect steep-pool could not be formed in any part of the country. The soil forming the bottom and sides of the pit will have an influence on the color of the fibre; clay, gravel, alluvial and peaty soil, will each impart some peculiar dye to the material, which more or less affect its value. The water used in the pit or pool must not be spring water, and it must not have flowed over any soil containing metallic deposits; and rain water is not well calculated for the purpose. But, in addition to all these difficulties attendant upon obtaining the requisite means, the grower of flax has to contend against all the uncertainties and risks of either over or under-steeping his flax. "One sultry night," says one of the reports of the Royal Flax Society, "while it is in the steep, and nearly rotted sufficiently, is enough to carry the fermentation beyond the safe point. So much is this feared by farmers, that almost all flax is under-watered; and although much of it is afterwards mannered on the grass, yet the greater proportion is brought to market with the shores still unseparated in bits on the fibres." But while the sultry nights of summer are unfavorable to the steeping of flax, and inconvenient to the farmer, inasmuch as his laborers are at that season generally otherwise employed, it is also obvious that during the winter, when comparatively little farm labor is carried on, the process of steeping must be discontinued altogether, in consequence of the temperature.

Schenck System.—A fourth process has, within the last few years, been very strenuously advocated by the Royal Flax Society in Ireland, which consists in steeping the flax in hot water. This mode, although doubtless an improvement upon any of the existing plans, still does not afford the means of obtaining that complete separation of the fibre which it is desirable to obtain. The Belfast Society do not pretend that is a mode generally applicable to the use of the producer of flax, for under what they term a "division of labor" they propose that the whole process of preparation, with the profits attendant upon it, and the additional labor required, shall be taken out of the hands of the growers, whom it designates as "a class of persons ignorant of the commonest chemical principles," and handed over to capitalists or speculators who will erect the required machinery in districts where the growth of a certain quantity of flax would be previously guaranteed. According to the reports of the Society, it appears that the profits upon the preparation of an Irish acre of flax would be something like 200 per cent. upon the amount paid to the grower for his produce. The farmer is paid for his flax a price ranging from £5 to £8 per acre; the steeper upon this principle of "division of labor," receiving a net profit (I take the figures of the advocates of the plan) of upwards of £20.

With such *inducements* as these offered by the Flax Society, I doubt much whether the agriculturists of this country will feel very much disposed to enter upon the growth of flax to the extent which the circumstances of the case require; and in Ireland I have no doubt but that the whole scheme, fraught with so many of the abuses of the middlemen system, will soon be found alike intolerable to producer and consumer.

The whole of these difficulties may, I believe, be easily overcome by the adoption of a system more in accordance with the present advanced state of practical science and knowledge, and which involves *the entire abolition* of the whole of the existing modes of steeping the flax in the straw.

STEEPING INJURIOUS.—Not only is the present process of steeping inconvenient and unnecessary, but it is highly injurious, as it imparts its injurious dyes to the fibre, deteriorates, and gives to it an inequality of strength, which in the subsequent stages of manufacture, are exceedingly difficult to overcome. I have found this to be more particularly the case in the preparation of the flax into a material capable of being spun alone or in combination with wool and cotton upon the existing machinery. I am anxious that the grower should not resort to any of the existing modes in the preparation of his flax; for any one step taken in that direction entails subsequently the necessity of much additional trouble and expense, in addition to most materially affecting the strength and quality of the yarns and threads produced from it.

Purchase in the Straw.—The mode in which I should most prefer to purchase flax would be in the straw, precisely as it is left after the removal of the seed. In this state it can be dealt with a far greater degree of certainty than in any other, and may be within four-and-twenty hours from the time of its being pulled ripe from the field, placed in a condition fit for preparation for spinning, upon any of the flax, cotton, wool, or silk machinery of the country.

Facility of Transit.—As there would be obviously many inconveniences connected with the transit and carriage to a large distance of a material so bulky as that of flax in the straw, the grower might in certain cases, by the use of a common breaker and a pair of toothed cylinders, remove a great portion of the more bulky part of the plant, and thus send the fibre in a partially-cleaned state to the market. The chaff obtained from this partial separation of the straw from the fibre, which contains a very large proportion of the inorganic matter from the soil, and which not having been destroyed by the process of steeping, will form a most valuable material for mixing with cake, crushed seed, the mucilage formed from it, or other articles of cattle-food.

Landlords.—There is also a third mode which might be made available in the case of the failure of either of the preceding plans, which is that of the erection of the required accommodation by the landlords for the use of their tenants, upon the payment of such sums as would be calculated to cover the interest of the capital invested, and the cost of keeping the buildings and apparatus in an efficient state of repair.

Profit.—There remains yet one very important point, to which I have at present only incidentally alluded; I mean the profit to the farmer upon the cultivation of flax. If I have succeeded in convincing you of the extent and certainty of the market which exists for the produce, and of the absolute necessity which exists for your endeavoring to obtain possession of those markets, I have no doubt that I shall be enabled most satisfactorily to prove that you can do so with considerable profit and advantage to yourselves.

SEED AND FIBRE.—It will be found in the first place that the profit derived from flax under the present modes of steeping, combined with the saving of the seed is considerably greater than can be obtained from the cultivation of *wheat* at present prices. Mr. Warnes states that the profit upon 14 acres of flax, grown and prepared by him last year, was upwards of £6 per acre over that of his wheat. His figures are.

	£	s.	d.
Prepared flax sold at Leeds,	238	16	0
Value of seed,	126	0	0
	364	16	0
Deduct cost of preparing flax,	140	0	0
Gross profit,	224	16	0
Value of produce of 14 acres of wheat, at 38 bushels to the acre, at 40s. per quarter,	133	0	0
Total balance in favor of flax over wheat, not including 6 tons, 6 cwt., of husks equal to hay, 26 cwt. of tow, and many loads of refuse for littering cattle,	£91	16	0

SEED ALONE.—The above is an instance in which both the seed and the fibre were saved and prepared. There are cases, however, in which the flax is grown solely for the purpose of seed, and others in which the seed is wasted or destroyed, the only object in such case being to obtain the fibre. In either case there is a greater profit to the grower than can be obtained from almost any other crop. Mr. Beare, probably one of the best farmers in the county of Norfolk, grows every year one or two acres of flax after wheat, and without manure, for the seed only. His crop last year yielded 26 bushels, which, at 10s. per bushel, would be worth £13; while his wheat crop did not exceed five quarters, which, sold at 40s., would yield but £10, leaving a profit in favor of flax-seed alone, (the straw being used as litter for cattle) of £3 per acre. I may state upon this point, as a general rule, under the present system, that, when grown for its seed alone, the flax fibre is coarse, and is not considered of so much value as that of a finer description.

FIBRE ALONE.—SEED DESTROYED. Numerous instances might be adduced, from the reports of the Royal Flax Society, to show that even in cases where the seed has been thrown into the steep pits and destroyed, the profit upon the sale and preparation of the fibre was still greater than that of many other of the crops. As the example thus set is one, however, which is not likely to be generally followed by enlightened agriculturists in this country, it is unnecessary for me to trouble you with any figures upon that point.

New process.—These, however, are returns obtained under the *present mode* of steeping and preparing the flax. According to the plan which I venture to submit, the returns will, I anticipate, be even more favorable to the grower.

Sold in straw.—In the case in which he may elect to dispose of his *flax in the straw*, the farmer would derive the full value of his crop of seed, and the straw would be worth to him £4 per ton, the produce being about two tons per acre. He will not be required, as is the case at present, to pull his flax before it is perfectly ripe, or before the seed has been fully or completely formed. Indeed the *coarser and more developed* is the stem of the plant, the more valuable will it be for the purpose of adaptation to the woolen and cotton machinery, and the fine gossamer threads can be produced from it with greater certainty and precision than when pulled in an earlier stage of its growth. The grower, therefore, need be under no fear as to the fineness of his crop, and he may obtain from it as large an amount of seed as his land will produce.

Partial cleaning.—If the difficulty of transporting the flax in the straw to any great distance should render it necessary for the grower to reduce its bulk, by the removal of some of the woody part of the plant, he will obtain by so doing, in addition to the seed, a valuable article of food for his cattle, and the enhanced value of the fibre will more than repay the amount of labor bestowed upon it.

Complete preparation.—If disposed to carry the preparation of the flax to its usual stage of adaptation to the spindles of the manufacturer, whether cotton, linen, wool, or silk, he will derive a profit larger and more certain than any which he can obtain under the present process; while from the refuse straw, impregnated with the salts used in its preparation, he will obtain a manure of the richest and most fertilizing character.

The Chevalier Claussen then laid before the council the following different specimens:

1. Samples of flax in the straw, pulled and rippled.

2. Samples of flax-straw, prepared according to the new process, adapted for linen manufactures.

3. Samples of long fibre scutched from part of No. 2.

4. Samples of flax-fibre, adapted for spinning on cotton machinery.

5. Sample of yarn spun on cotton machinery, some from all the above flax-fibre, others mixed in various proportions with the American cotton; these mixtures being termed by the inventor flax-cotton.

6. Samples of flax-fibre prepared for mixing with wool.

7. Samples of yarn produced on ordinary woolen machinery, composed of wool and flax in various proportions, termed by the inventor flax-wool.

8. Samples of flannel woven from the above.

9. Samples of fine cloth woven from yarn composed of flax and fine wool in various proportions.

10. Flax-fibre prepared for mixing with silk, and dyed with colors.

11. Flax-fibre mixed with spun silk, and termed by the inventor flax-silk.

12. A sample of yarn produced from the above.

13. Samples of flax-cotton yarn dyed of various colors.

14. Samples of cloth woven from flax-cotton yarn and wool, dyed.

The following are the advantages detailed by the Chevalier Claussen and his friends, as possessed by the new process over the old methods:

1. That by the Chevalier Claussen's process the preparation of long fibre for scutching is effected in less than one day, and he always produces a fibre uniform in strength and entirely free from color, much facilitating the after process of bleaching either in yarns or in cloth.

2. That he can also bleach it in the straw at very little additional expense of time or money.

3. That the former tedious and uncertain modes of steeping are superseded by one perfectly certain with ordinary care.

4. That in consequence of a more complete severance of the fibres from each other, and also from the bark and boon, the process of scutching is effected with half the labor usually employed.

[These advantages referred to that portion of the invention that includes the preparation of flax for spinning upon the ordinary flax machinery, and suited to existing markets. The further advantages have reference to the creation of new markets for British produce.]

5. That by the new process flax is rendered capable of being spun, either in whole or in part, on any existing spinning machinery.

6. That the fibre, to be mixed with cotton, or spun alone on cotton machinery, is so completely assimilated in its character to that of cotton, that it is capable of receiving the same rich opaque color that characterises all dyed cotton; and, consequently, any cloth made from flax-cotton yarn can be readily printed, dyed or bleached by the ordinary cotton processes.

7. That flax-fibre can be always produced with profit to the British grower at a less price than cotton can be imported into this country with profit to the foreign producer.

8. That as a consequence of this advantage, the manufacturers of this country will be less dependent on the fluctuations of the

cotton crop for a supply of the raw material, and a more regular employment will be given to the manufacturing population, and the present amount of local rates be greatly diminished thereby.

9. That the British grower will derive great benefit from a supply of the wide demand thus opened to him.

10. That with respect to the advantages of being able to spin flax in combination with wool on the existing wool machinery, the first is, that the flax prepared by M. Claussen is capable of being scribbed, spun, woven, and milled, in all respects as if it were entirely wool; having an advantage in this respect over cotton, which has not the slightest milling properties; on the contrary, the flax fibre is capable of being even made into common felt hats with or without the admixture of wool. To such an extent has the milling properties of Flax been proved, that the sample of cloth exhibited had been woven to 54 inches wide, and milled up to 28 inches wide.

11. That the flax fibre will not, under any circumstances, when prepared for spinning with wool, cost more than from 6d. to 8d. per lb., while the wool with which it may be mixed will cost from 2s. to 4s. per lb.; consequently reducing the price of cloth produced from this mixture 25 or 30 per cent. below the present prices of cloth made wholly from wool, and being of equal, if not greater durability.

12. That short-wool refuse, which cannot by itself be spun into a thread, by being mixed with this thread, can be rapidly spun and manufactured into serviceable cloths.

13. That there is a probability of a further demand being opened up for this fibre in the flannel and woolen trade.

14. That by this process flax may be also so prepared as to be spun in any certain proportions with silk upon the existing silk machinery; that when so spun, it is capable of receiving considerable brilliancy of tint. That the fibre may be prepared for thus spinning at an uniform price of from 6d. to 8d. per lb. That as it may be spun in any proportions with silk, it is evident that the price of the yarns must be reduced according to the

relative proportions of the materials employed, thus extending the markets, and giving increased employment to the operatives.

15. That, by M. Claussen's process of bleaching, any useless flax can be converted into a first-rate article for the paper-maker, at a less price than the paper-maker is now paying for white rags; and suitable for the manufacture of first-class papers.

In conclusion, M. Claussen and his friends had no doubt that a plan might be devised by which the grower of flax would derive not only the benefits to be obtained from the sale or consumption of his flax-seed, and the sale of his straw, as stated in the paper read, and the further advantages to be derived by him from the partial separation of the woody part of the stem from the fibre, which would reduce the cost of transit, and provide for a larger return to the land; but also the larger profit to be derived from the transforming of the straw into fibres suitable for any of the purposes above described, according to the suggestion pointed out in the paper read to the meeting, and thus secure to themselves that double profit, which, under the present system, it was all but impossible for them to obtain.

Sir James Graham inquired whether the farmer, in separating the seed from the straw, would be liable to injure the fibre? To which

M. Claussen replied that no such injury to the fibre would arise from any of the present modes of separating the seed from the straw, so long as the separation was made longitudinally; that an ordinary thrashing machine might be so employed as not to injure the fibre; in fact, that the only injury that could arise would ensue from breaking the fibre across, or steeping it on the old system.

The Chairman thought it desirable that no time should be lost in putting the farmer in possession of all the conditions under which flax could be grown advantageously, and conveyed to market at a profit, as the time for sowing the crop was near at hand.

Mr. Alcock, M. P., stated that coals could be brought from Yorkshire at 7s. 6d. per ton, but they were a compact heavy article of transit, while flax would be bulky and light.

Mr. M'Dermott observed that the bulk of the flax might be reduced by partial removal of the straw by a machine that would not cost more than £10, and also by hydraulic pressure, as in the case of hay for exportation, and that probably the railways might eventually contract at lower rates for the conveyance of this new branch of traffic.

Mr. Majendie thought if the machine was portable, it might be let out from farm to farm. If the new process did not produce any injurious effect on flax that rendered it unfit in any degree for subsequent use in all the ordinary stages of manufacture, it would prove of great benefit to the country.

Mr. Christopher, M. P., and Colonel Challoner, thought it desirable that the cost of machinery required by farmers for commencing this branch of cultivation, so new to many of them, should be accurately ascertained.

Mr. Miles, M. P., had been just endeavoring to obtain that information from one of M. Claussen's friends near him, and it appeared that one machine only was essential, but that two might, for farther preparation of the flax, be employed, if the farmer thought proper; the first machine would cost £10, and one object of it was partially to separate the fibre, leaving the shoves or gross remaining matter, amounting to two-thirds of the original flax, behind, to be returned by the farmer to the land; the second machine would cost £50, and was adapted for clearing the fibres effectually from the refuse after the first chemical process.

The Hon. Dudley Pelham, M. P., conceived it important to inquire into the effect that the introduction of this new system would have on the relative employment of laborers in flax culture and its operations.

Mr. Kennedy inquired the price of new "British cotton" compared with that of ordinary foreign cotton, and was informed that it was from 4d. to 6d. per lb.; while the foreign cotton ranged from 8d. upwards, according to quality.

Mr. Fisher Hobbs informed the council of the result attending flax culture in the eastern counties, where the growers had been unable to obtain a market for their produce. The farmer's capital was, he thought, too nearly exhausted at the present moment to render it prudent for him to embark in any new line of cultivation, without being first well assured after having overcome all the practical difficulties of a new crop, and its preparation for sale, he should find a ready market for its disposal. He hoped, as in the case of wool, that there would be a probability of farmers having a flax market, so that the article might be taken off their hands at so much per acre or ton, without loss or risk of the capital employed. Seeing among them that day a member of the distinguished family of the Leeds flax-spinners, he would appeal to him on this point, in the hope that he would be able, from experience of the whole question, to favor them with an opinion on the subject.

Colonel Challoner then ascertained, by inquiries addressed to M. Claussen, that flax injured by the farmer for sale and use under the old system, was available and equivalent to uninjured flax for the purposes of M. Claussen, who would give as good a price for it.

Mr. Marshall, M. P., replied that his brothers were the flax-spinners; he was only to a limited extent, a grower of flax for their own use. They were, he believed, in the habit of paying £7 or £8 per acre for the use of land for the flax crop, they bearing all the expenses of cultivation, while the farmer had the benefit of the land for the remainder of the year. There was at the present time, he believed, a considerable market for flax. In Belgium the "fabricant" relieved the grower of all trouble and responsibility attending his crop, visiting his farm in person and taking it at a valuation. On the present plan, the object was to obtain long fibre; cloth formed of which in the warp with cotton, and more durable in wear, being employed for sheeting and shirting. On the new principle, the flax, it appeared, was broken up into short fibre; and instead of steeping in hot or cold water, chemical means were employed to facilitate the process without injury to the material. If land was clean and in good order, flax might be grown without manure. But the farmer could not, under the present system of steeping, both grow it and prepare it for the manufacturer. With regard to the thick and thin sowing, that question had reference to the object of the cultivator, namely, whether a fine fibre and little seed were required, or a coarser fibre with a full crop of seed. On the banks of the Lys, in Belgium, where the finest flax had been grown for centuries, and used for making the finest lace, they practised thick sowing, three and a half bushels per acre, and obtained about fourteen bushels of seed per acre, but the stems were long and straight, without branches and the longest fibre was obtained. In Ireland and Russia thin sowing was practised, from two to two and a half bushels per acre, and from sixteen to twenty bushels of seed were obtained; but the stems of the flax branched out more, and an inferior fibre was the result. It would be the safest plan for beginners in this country to sow thin, and thus get more linseed and straw. He concluded by remarking that if M. Claussen succeeded in his laudable endeavors, so much the better would it be for the farmers of this country.

Mr. Macartney thought that the average growth of flax in Ireland had fallen off. He referred to Lord Clarendon's liberal aid in promoting its cultivation in that part of the United Kingdom, to the mode in which the factors purchased the crops, to the cost of conveyance, and to Schenck's improvement in steeping.

Mr. Hammond had grown flax in Norfolk, but, finding no market for his produce, he had sent his flax to be manufactured into linen for his own shirts. He had also had several of the cottages on his estate thatched with the straw, and more beautiful thatch he never saw.

Mr. Fuller, M. P., had also grown flax, in Sussex, but he had no better success in getting it off his hands; and when he offered it to a large manufacturing house, he was told that they could only give him linen in return for it.

Mr. Shelley remarked that there was no difficulty in farmers growing flax, the only difficulty was to get a market for it. In Sussex it could not be turned into money. If M. Claussen could make it marketable for them, he would find no want of growers. It was, he thought, of little purpose to tell farmers of the quantity grown and the price it ought to fetch.

M. Claussen replied that it was both simple and easy to prepare the flax for the spindle, and he would undertake to furnish persons properly instructed who would direct the farmers how to proceed. There was one house at Bradford, that of Messrs. Quitzow, Schlesinger & Co., flax-spinners, dyers and merchants, whose only fear was that enough flax would not be grown for their use; and they were, he believed, ready to give £4 per ton for flax of fair quality.

Professor Way observed that the present system of preparing flax only applied to existing markets. M. Claussen's method, as he understood it, had the merit of opening new and extensive markets for this article; and there was one important point in the new plan—that there would be no distinction of flax into fine or coarse qualities. The farmer, too, under the new system, would not be obliged to pull his flax, as under the system hitherto in use, before it was ripe, in order to procure a higher price for his fibre; but, on the contrary, it will not be necessary to pull it until the seed and stalk were fully ripe. The farmer would thus obtain a larger proportion of fibre in proportion to the bulk, and a heavier crop of seed. He understood the quality of fibre in the new process not to be so essentially of importance as under the former plan, and that farmers may break the flax to reduce its bulk. The new material would be intermediate between linen and cotton; less valuable than the one, but more valuable than the other.

Mr. Shelley then rose to propose a vote of thanks to M. Claussen for the favor he had done them in his attendance on the occasion, and the information he had laid before the council. He heartily wished him success in the practical development of his new discovery, and hoped that the farmers would reap the benefit of it, and obtain a fair remuneration for their produce.

Mr. Miles, M. P., seconded the motion. Kind, indeed, it had been of M. Claussen to come before them that day, before he had completely secured his patent, to give them the earliest notification of the agricultural bearing of his researches. He trusted that the result would prove as good for himself as for the farmers, whose interests he had then advocated.

The chairman then put the vote, which was carried unanimously. He was sure they all felt deeply obliged to the Chevalier Claussen for the favor he had done them. The information had been fully submitted to their consideration, but of course they received it without any inference being drawn from such reception that the council held themselves responsible in any degree for the opinion expressed by M. Claussen. He thought it his duty, as their chairman to repeat this caution. On that day fortnight, namely, on Wednesday, the 26th of February, at noon, M. Claussen had consented to again attend, for the purpose of detailing, after the completion of his specifications, the details connected with his new process. Mr. Beale Browne would probably on the same day bring forward one statement, of which he had given notice, of his long experience in the cultivation of flax.

Flax Cotton.—Few persons in England have distinguished themselves as advocates of British free trade more than Sir James Graham, a member of the present British cabinet, and now probably at the head of the ministry; and as it may interest our southern readers to see his views on the subject of flax cotton, we take the following from the report of the debate on Mr. D'Israeli's motion, received by the last steamer:

"This question of the price of cotton did, he thought, open up some hope to the landed interest. And from whence did it come?

——————"Via prima salutis
Quod minime reris, Graia pandeture ab urbe."

[Cheers.] As he had said from whence they could least expect it—from Rochdale. [Hear, hear.] From the house of Bright Brothers. [Loud cheers.] It had been discovered through their means that by an invention in science, flax stalk might be used to great advantage, and in diminution of the cost, in mixture with cotton wool, sheep's wool, and even, as he had been informed, with silk wool. [Cheers.] The loss of the potato crop was doubtless a severe infliction, but he could consider no dispensation of Providence more remarkable than that it should have become the means, by the aid of science and skill, of overcoming the difficulty consequent upon the diminution of the supply and the increase in the price of the raw material of our principal manufacture. *By this discovery we should be, in a great degree, made independent of the foreign supply of the great staple of our manufacture;* and if the cultivation of flax met with due encouragement they would hear but little more, he was confident, of the distresses of the weavers of Carlisle."

Sir James is a great admirer of the mutual dependence of nations resulting from the closing of the mills and furnaces of the world, by which the planters and farmers of the world are rendered dependent on England for their supplies of iron and of cloth; but he would seem equally to admire the mutual independence of nations, as manifested by the substitution of English and Irish flax for Georgia and Alabama cotton. How long will our planters continue to aid in the maintenance of a system of policy that drives all the spinning machinery of the world to the countries that can and will grow flax at far less cost than they can grow cotton?

Judge Vanwyck.—It appears to me that this subject greatly increases in interest as discussion leads to new developments, and our agriculturists ought to have all the light that can be brought before them. It is our duty and a great pleasure to be able to help them by collecting and then diffusing every ray of it. It is too apparent to escape the observation, that in raising and managing flax we should divide the labors, thus making it very easy for one man to sow, another to rot, another to dress, &c., &c. The farmer will raise enough as soon as he is convinced of the profits. In old times we made flax one of the regular crops, enough for each farm, and the spinning-wheel was busy in every good farmer's house. The cloth they made cost something more than the imported linens, but they wore twice as long. Our worthy friend Blakeslee, of Watertown, in Connecticut, sends us a very fine sample of his last year's flax crop, the stalks *three feet in* *length.* He has raised it for seed and fibre with profit for forty years past. We should look out for new and better modes of culture; we must not adopt the errors of some farmers as to its exhaustion of soil. As to its preparation, Schenck's system should be well examined; hot water steeping and rippling the flax by machinery, separating the flax from the fibre without damage to the germination or the oil produce of the seed. Formerly the seed was, by some, kiln-dried, which killed its germ. Donelan's plan left impurities in the fibre, which appeared at various stages of the manufacture.

The committee who examined it disapproved of Donelan's method. In 1815 and 1816, two gentlemen in England claimed to separate the fibre by some chemical process, but it was abandoned and the people went back to the old ways of water rotting. In that operation, much depends upon a suitable temperature. The plan of these gentlemen was the dry one, and that now under consideration is loosening the fibre from the gum and resin and dissolving the silex by chemical means. We must wait for a successful result. In Belgium, Holland, and some in Ireland, the division of labor prevails in the flax crop. The Royal Society of Ireland recommended it to the Irish farmers, but they did not generally adopt it. The demand for linens and for flax-seed is now greater than the supply. It is said in England that the manure of cattle fed on oil cake is very enriching to the land, more so than from any other food, and will fully restore the exhaustion caused by growing the seed. When flax goes to seed I think that it exhausts the soil, taking out some of the richest ingredients of it, but if we can get them back through the same article, there is no harm done.

At present, Schenck's patent goes ahead of every other for cheapness and efficiency in preparing the fibre for use; it is adopted and more generally used than any other. The society for improving the flax culture of Ireland, in their last report recently made, recommend it decidedly. It is done in a shorter time and much better than the old pool system. It is done in vats or large tanks, containing a large quantity at once, in hot water of a uniform temperature and perfectly under the control of the operator. The seed must be taken off in Schenck's process, and he will do it and do it well, if required. The committee think no other system as yet can be adopted in practice, although they hope and believe some cheaper and more efficient one will in time be discovered.

Gen. Chandler.—I deem it a fortunate occurrence that the club has at this time, entered upon the consideration of the culture and manufacture of flax, because I am confident the three days already devoted to it, will enable us to compile and place before the public much valuable, new, and interesting matter relative thereto, which in all probability will add something by way of stimulating the general investigation of a subject of so much importance.

I well remember that in 1808 I had the good fortune to possess some shirts made of homespun linen, which for comfortable wear, snowy whiteness, and durability, surpassed anything in that department of apparel that has fallen to my lot since. I think I may say, without exaggeration, that one of them would outwear three of the present day. Shirtings made of American cotton were not at that period much known, and the general substitute for linen was India muslin, or hum-hums—a weak, fragile, and miserable fabric.

The inventions of Arkwright for spinning demanded an increased supply of cotton, which in all probability would never have been furnished but for the invention of the cotton gin by our own Whitney. Thus furnished, cotton rapidly gained in public estimation, and the continued diminution in its price caused it to occupy extensively the places and supply the wants for which we had before looked to the blooming field of flax, the spinning wheel and the distaff. All this was not accomplished without the necessity of surmounting obstacles greater, apparently, than any which now lie in the way of reinstating linen. I believe there are no difficulties which may not be overcome by perseverance and the ingenuity of our countrymen properly stimulated. I was much gratified the other day by the response to a question which I put to one whom I consider as standing preeminent among the ingenious men of the present day. I asked him whether a machine could not be invented for the purpose of pulling flax. "There is not the slightest difficulty," said he, with much sincerity; "it can be done as soon as the wants of the people demand it. I know what it is; my back has ached often at that labor when a boy."

We have had before us during these discussions various specimens of the fabrics of linen, and linen mixed with cotton, and through the kind attention of Mr. Ellsworth, late Commissioner of Patents, we have seen the material now prepared and called flax cotton, the snowy whiteness of which was the principal distinguishing feature between it and the veritable cotton. If by any newly discovered process flax can be prepared in quantity for the price which has been stated, (eight cents per lb.,) equal in quality to the specimens we have seen, then the whole matter is actually accomplished. It can be spun on any machinery now in existence with as much facility as the material for which the machine was originally designed, and must inevitably, to a large extent, take the place of cotton. But we must not be too sanguine, for although these statements come to us under the sanction of highly respectable and responsible names, the end, nevertheless, may not be so fully attained as we might be led to believe. There is certainly nothing that should for a moment deter us in the prosecution of an enterprise, the result of which, if successful, is of such magnitude, and the accomplishment of which seems to be clearly within our reach.

Mr. Fleet.—Cotton has attained the supremacy. In place of flax our farmers have turned their attention to the cultivation of fruit; and the failure of the efforts recently made to grow silk, which may surely and profitably be done on every farm, discourages new projects. We shall never succeed with flax if we must cut the fibres. That must be first obviated; still I indulge in hopes of ultimate success.

Gen. Chandler called the attention of members to the splendid artificial imitation fruits on the table, the work of Townend Glover, of Fishkill Landing, N. Y. The fruits exhibited are, varieties of apples 50, plums 37, apricots 4, nectarines 6, quinces 4, grapes 5, Osage orange and pears 39.

Mr. Glover will undertake to make the large fruits for one dollar each, and the smaller for somewhat less.

Vice President Pell moved that this club request the American Institute to award the gold medal to Mr. Glover, and request him to furnish the Institute with a written statement of the varieties of fruit, that it may be printed in the transactions of the Institute.

Messrs. Nash and Chandler seconded the motion. Carried unanimously.

Mr. Glover presented some *Louise Bon de Jersie* pears to taste. These pears were taken from the tree in September last. Without proper care they will hardly keep more than a month. These have been kept, by a special method, by Mr. Curtis, of Boston. Raised by F. Tudor, at Nahant.

Gen. Chandler called the attention of the Club to the business of the 1st and 8th of April next. He moved that the annual distribution of seeds, grafts, plants, cuttings and Indian corn, commence on the 1st of April, and the subject of cattle be the exclusive one for the 8th of April.

Mr. Nash moved the publication of the last circular of the American Institute relative to the Farmers' Club. Carried.

The club adjourned.

H. MEIGS.

American Institute,
Farmers' Club, April 1st, 1851.

President Tallmadge in the chair. Henry Meigs, Secretary.

CORN AS AN ARTICLE OF FOOD.

The President observed that as the subject for discussion was the preparation of Indian Corn for food, he called upon Mr. J. R. Stafford to speak of his new methods.

Mr. J. R. Stafford—Gentlemen: Having been invited by your honorable secretary to take part in the discussion on Indian corn, set apart for this day's meeting, I will now make a few remarks on the culture, production, manufacture and preservation of this most invaluable grain—in fact, *the great native American staple.* I have paid some attention to its culture, but as my experience in this respect does not equal that of the several farmers here present, I shall not speak of its culture but in general terms. I know a little of the chemical constituents; for I have but little faith in chemical analyses of grains to determine their nutrition, because I find that no two analyses correspond. It is impossible that they should; the air that the plant breathes, and the food that it feeds on, is never the same in different locations; hence chemical analyses can but generalize. We are informed by chemists that wheat is the most nutritious cereal grain that is produced, because it contains the most gluten and the most of bone and muscle forming materials. We are also informed that by far the greater proportion of the latter materials are to be found in the bran of that grain; yet the bran is repudiated by common consent, and flour, which displays the least of it, brings the most money. We know that Indian corn contains starch, oil, gluten and albumen; that with the exception of but a few per cent of fibre, these are the constituents of the grain; that the outer covering or bran is mostly silicious; that it is of but little weight, and that it is easily separated from the grain. And then we have the practical experience of a large majority of the people residing in the Western hemisphere, by its universal use to the exclusion of other breadstuffs, that man may subsist on it.

Indian corn is also in general use, on the Western continent, for feeding and fattening all the domestic animals except the dog and the cat, and no substitute can be so cheaply produced, in America, to take its place. In its culture, in what may be termed the corn-growing districts of the United States, which includes the States of New-York, New-Jersey, Pennsylvania, Virginia, Delaware, North Carolina, Ohio, Kentucky, Tennessee, Missouri, Indiana, Illinois, and the southern portions of Michigan, Wisconsin and Iowa, this plant has no enemies—the crop is sure, and the yield varies according to soil, climate and the seasons, from 40 to 125 bushels to the acre. The cost of production varies from 8 to 30 cents per bushel; the value of the land, its richness, the yield, and the labor bestowed on the crop, making the difference. Out of these districts, the climate is either too cold or too warm, and subject to the attacks of too many enemies to render a yield that will remunerate the producer beyond his own wants.

The varieties of maize are very numerous. These varieties are produced by the soil and climate in which it is grown. For example, the round yellow flint corn, grown in southern counties of the State of New-York, when transferred to Delaware becomes elongated in shape, spongy in texture, and having albumen substituted for oil in its composition. If it be transferred to the northern counties of New-York the grain becomes much less in size, more compact in texture, and possessing a much larger proportion of oil. Thus we see that nature has exactly adapted this grain to the use of man and his domestic animals, if used in similar climates to that in which it is grown.

A great difficulty has been found to exist in the exportation of this grain. It is found to heat and become musty, and to decay if shelled from the cob, and stored in any considerable quantities; a difficulty that does not exist with any of the other cereal productions. To comprehend the causes and to apply a remedy, is to make the use of Indian corn as universal throughout the world, as the restrictions that have been placed upon commerce will permit.

When this grain is left on the cob, and it is stored in narrow ventilated cribs, it may be kept for a great number of years without undergoing change. An examination of any variety will show that the interior is composed of a spongy matter, which is a continuation of the fibrous particles that connected it with the cob. The use of these fibres is to transmit the moisture and constituents of the grain from the cob, therefore, when shelled, this portion of the grain is divested of the protection of the bran, like the other portions of the grain, and becomes the medium of absorption not only of the surrounding atmosphere, but of all the *fumes* contained therein. For this reason, the grain of Indian corn can never be transported any considerable distance in vessels, without it undergoes change, or without it imbibes fumes that render its use repugnant to the taste of man or animals. For if when it is placed in vessels it contains an undue quantity of moisture, it will heat and decay; if dry, it will absorb moisture and *fumes*. And it is for this reason that Europeans have become prejudiced against the use of our Indian corn as food for themselves. Their domestic animals feed upon it from a natural taste for the grain, but its effects upon them when in the imperfect state described, cannot be other than deleterious.

If this grain was left in the field a longer period than usual, and if it was also permitted to remain long enough in the crib, until the cob should become entirely exhausted of its moisture, and then be exported on the cob, we, of the Eastern States, could receive this product of our Western States in perfection and thus ship it to half-fed Europeans. But to export Indian corn upon the cob is impracticable, from its bulk, and the consequent cost. To obviate these difficulties, *kiln drying* was resorted to, and has been in use for many years in the United States. The process consists of passing the grain over highly heated pans, or through highly heated cylinders, which carbonizes the bran, and heats the grain to a degree sufficient that when placed in a pile of several hundred bushels it shall, by the force of the heat imbibed, carry off the moisture of the grain. This latter process requires 24 to 36 hours. Some of the moisture condenses and falls back on the pile; this portion of the grain is raked off, and the grain which is dried has been rendered very friable by the *scorching* and *scalding* process it has undergone. It is then ground between mill-stones in the usual manner. This is the food which the slaves of the West Indies are made to eat, and it is this kind of meal of which quantities were shipped to Ireland and England during the famine; and it is such food that many of our sailors are compelled to eat in our merchant marine. There are but a very few persons in the United States who are not interested either in the manufacture of it, the West India or South American trade, that know what kiln dried corn meal is. It is never consumed in the United States, for you will readily perceive that to submit it to another cooking process must extract much of the nutrition left in it; and to use it half-cooked must be productive of injurious effects.

The evils attendant upon the imperfect manner of keeping, of manufacturing, and of attempted preservation of this grain, has been a subject of deep and earnest consideration with me for more than twenty-five years, during which time I have been mostly engaged with its manufacture in different shapes, or in feeding it. The conclusion I came to several years since, was, that Indian corn, when divested from the cob, could not be transported in bulk or in sacks, confined in the hold of a vessel, nor be kept in bins without undergoing chemical changes which unfitted it for use for man or animals. That the exclusion of the moisture of the manufactured grain by a low degree of heat, if a proper evaporation of expelled moisture could be secured, was all that was requisite to prevent its undergoing change if it was immediately placed in the usual packages and excluded from the atmosphere. That the exclusion of the moisture did not detract from the nutritious qualities, as it was essential to the reproduction of the grain that it should be thoroughly dried, as is always practised by the grower with his seed corn. That the grain being composed of different substances, some soft and spongy, while others were of different degrees of hardness; that the process of manufacture by the time-honored practice of grinding was irrational; that the soft portions were pulverized into dust while the harder were rendered in size according to their relative density, and that in cooking a large proportion would either not be properly cooked, while the balance would be unfit for human digestion; and hence the partiality that is known to exist for the coarse and even manufacture of this grain, known as hommony.

That I have been successful in the process of excluding the moisture without changing the color, quality, or flavor of the grain, the numerous testimonials and samples I herewith lay before this meeting will adduce. That I have also improved the mode of manufacture, the evenness and distinctness of the particles in the samples herewith shown, and the entire absence of dust will demonstrate. These improved processes must convince you, gentlemen, as they have all others who have seen or used them, that our greatest staple can be made available in most inviting forms, not only to our own people, who are accustomed to the daily use of Indian corn, but to all classes in all other parts of the earth, when our commerce is not restricted from exchanging our productions for those of other nations on reciprocal terms.

Mr. Stafford continued his remarks, commenting at length on the present crisis of the affairs of England, our excessive importations, and the probability that England would return to import duties on bread stuffs, as a protection to her landed interest; that cheap bread was of the greatest importance to her manufacturing interest, to enable her to sustain herself in the markets of the world against the competition of the continent; and that the admission of Indian corn free of duty would be to her a measure of the greatest importance, &c.

Gen. Chandler.—I feel constrained to say that there is very little in the past which furnishes the slighest encouragement for us to expect that we shall ever be able to furnish Great Britain with but a very small portion of her bread-stuffs, except in cases of famine, or a general war in Europe. Whoever builds his hopes upon a belief that it will be otherwise, will find that he has been mistaken. It may be well to remember that in 1831, under the operation of the memorable corn law sliding scale, when the duty in England fell to one shilling per quarter, and she was compelled to import 18,492,896 bushels of wheat in that year, she obtained only 393,757 bushels from the United States! It was the low price of labor in the north of Europe which enabled her to procure her supplies there cheaper than she could obtain them from us. What is there in the condition of things, present or prospective, to which we can look as affording any reasonable probability of a change?

Mr. Stafford has succeeded admirably in the preparation of Indian meal for transportation, for which he deserves the thanks of the nation. I most sincerely hope he may realize all his anticipations in regard to it. It may be carried, prepared under his process, to the remotest parts of the world pure and sweet. The increasing multitudes of our own species which must be supplied with food that is cheap and wholesome, indicates almost the certainty of an extensive demand for it. It may not be amiss to remark, however, that Indian corn is now produced in no very inconsiderable quantity in the southern part of Europe, and may be increased, should the increased demand for it warrant its more extensive cultivation; so that our condition in regard to this product, with an ability to produce it vastly beyond our own wants, may be no better than it is with our present abundance of wheat and other bread-stuffs, unable to reach a profitable market abroad. We are clearly admonished by the experience of the past, and facts glaringly before our eyes daily, that our best and truest policy is to build up and sustain a home market for the surplus productions of our agricultural labor.

The rich alluvial soils which abound in Wallachia and Moldavia, near the Danube and its tributaries, produce annually a greater amount of India corn than is generally known. In four years, from 1837 to 1840 inclusive, 5,537,896 bushels of it were shipped from ports at the mouth of the Danube on the Black Sea, at an average cost of 24 cents per bushel, free on board, and the trade was considered to be in its infancy.

Prof. Mapes.—I will offer a few remarks on the cultivation of corn. The methods having been somewhat modified so as to do away with the expensive and laborious use of the hoe, the corn is planted in rows, at nineteen inches apart, parcels of three grains each, with a distance of four feet between the rows. When the corn is three inches high, a small furrow is thrown from the corn on each side of the row, leaving the corn ridge six inches wide, the centre of which is occupied by the corn plant. When special manure is used, it should be placed in this furrow, and then a small sub-soil plough, with its flat side towards the corn, is run to as great a depth as practicable in the bottom of the furrow, thus mixing the special manure with the soil of the furrow and distributing (without elevating the subsoil.) The wing side of the plough being toward the four foot space, elevates the ground two or three inches, restoring it behind the head of the plough in a loosened condition. The line of disintegration being angular and not perpendicular to the line of travel. Loosen the soil for a foot or more towards the centre of the open space. A cultivator set three feet six inches wide, with two small ploughshares in place of it, rear teeth should now be run through the four foot space, thus lowering the soil for the whole width, refilling the furrows and covering the special manure. Such treatment with the subsoil plough as before recommended being to a great depth, is more than equal to twenty ordinary hoeings. The uses of this subsoil cut, are various. First, it permits the long roots of the corn to pass down in time of drought and obtain moisture; during excessive rains, it acts partly as an under-drain, and protects part of the roots at least from a surcharge of moisture. As these subsoil cuts are in no instance more than four feet apart—act as drains for the reception of all moisture received on these four-feet spaces from rains, dews, &c.; which of course contain all the fertilizing gases received from the atmosphere and conveying them immediately to the roots of the plants. In the corn ridge itself, these two drains being but six inches apart, renders the space between them replete with fertilizing materials. The special manure contained in the vicinity of this ridge, as well as the soluble portions of that which pervades the soil generally, is brought to the spot where most needed. The mere breaking of the surface of this six-inch ridge by the hoe, between the stools is all the hoeing that will be required. The after culture consists entirely in the running of the cultivator in the four foot spaces which will keep down all weeds and insure mellowness of surface. When the corn is ripe the roots will be found to occupy these subsoil cuts like two door mats stood upon their edges, throwing numberless fibres through the six inch ridge; while the number of roots thrown into the four-foot spaces will depend entirely upon the judicious selection and quantity used of special manures in the furrows. The crop of corn which your committee reported last year as equalling 75 bushels shelled per acre, was raised by the method above described. The special manure containing those chemical requirements of the corn which were deficient in the soil, the same lot in the previous year having refused corn altogether. The cost of the special manure applied being one dollar thirty-one and a half cents per acre. In Monmouth and other counties of New-Jersey, where the green sand marls are used, and indeed in all localities where fertilizers of an inorganic character are applied, an addition of cheap organic matter is always desirable, as it must be evident that from a full quantity present in the soil of these matters, which constitute the ashes of the intended crop, if burned, must necessarily accelerate the decomposition of organic constituents; they therefore should be renewed by the addition of peat, muck, river mud, or other cheap organic matter. For while the farmers of western New-York, by the growing of wheat, have exhausted from strong organic soils nearly the whole of their inorganic constituents, the farmers of Monmouth, by the application of large doses of inorganic matter, in the shape of marl, have exhausted, or are rapidly exhausting, the organic constituents of their soils. Thus, from two distinct causes, similar exhaustions may take place in each of these localities.

But if the marls of Monmouth could be exchanged for the organic matter of western New-York, both soils would be rendered superior in quality. Therefore the farmers of New-York, for raising corn or other grain, should add potash, phosphate of lime, and the other missing inorganic constituents of good soils, while the farmers of Monmouth should add to their marled lands the vegetable deposits to be found so plentifully in their vallies.

Farmers should always be sure when planting for corn, that their soils contain a sufficiency of the soluble silicates, for it is silex (the base of flint and common sand) which forms the outer coating of the stalks, &c., gives strength to enable the plant to perfect its organism, without which it cannot digest the pabulum for the production of fruit.

The spent ley of the soap boiler previously composted with a quantity of soil and then sown broad-cast before ploughing, will secure a supply of these desirable soluble silicates.

Prof. Mapes presented a quantity of the seed of Stowell's ever-green corn, to be divided among the members, and stated that any farmer requiring small quantities of the seed, can obtain it without charge, at the office of his paper, *The Working Farmer*, No. 25 Cliff street, New-York.

At the dinner of the Managers of the Fair of the American Institute, in October last, this corn was placed upon the table boiled, part of which had been pulled in August, 1849, and part in August, 1850, but which having remained covered by the husks, had retained the milk and usual plumpness.

President Tallmadge observed that our large grained southern white corn was difficult to transport abroad on account of its tendency to absorb moisture as well as the quantity naturally in it—while the northern hard yellow grain can be shipped in almost the same condition as wheat. This kind has obtained the name of Canadian corn, as it flourishes in the more northerly districts of our continent.

I have listened with great interest to the remarks of Mr. Stafford, Gen. Chandler and Prof. Mapes; my attention has lately been strongly drawn to corn and its mode of preservation in a fit condition for cooking in the winter season as green corn. The tin can, which I have in my hand, contains about three half-pints of corn and is hermetically sealed; and when first brought into market from Massachusetts sold at 75 cents per can; it now sells at 50 cts. I have made inquiries as to the cost of the tin cans, or cases, and find that they can be made in quantities for six cents each and perhaps less.

The average market price of corn is about 62 cts. per bushel, which includes rent of land, cost of production, storage, transportation to market, &c.

The same bushel of corn, plucked as green corn and put up in cans as directed, produces the following result, viz: forty of these cans are contained in one bushel, which are now sold at 50 cts. per can, giving $20 per bushel. Deduct the cost of 40 cans at 6 cts. each, $2.40—extra work in this manner of putting up, say six cents per can, $2.40—total, $4.80, from $20 leaves as the net profits, $15.20 per bushel, less the ordinary cost of production.

Corn, put up in this manner, gives a new staple to the farmer, employs a tinman in the village to make the cans, and sold at prices which will amply remunerate, affords the luxury of green corn in the winter season to all classes; and there is no reason why it may not become an article of extensive export. The same process may be extended to peas, beans, &c.

Put the price down in order that our laboring people can have it as often as they want it. A tinman told me that he believed, when he had everything arranged for turning the cans out in great number, that he could turn them out almost as fast as a man could count them.

The corn is prepared by partially boiling, then spread to dry perfectly, then soldered up hermetically in the cans.

Judge Van Wyck—This subject of Indian corn, always interesting to our country, as no grain is more universally used, and in such a variety of ways. The growers and consumers of it, all have a deep interest in the culture, as well as preserving and manufacturing it for use at home, and also as an article of commerce and exportation. These branches have been ably considered by gentlemen who have made it their business to consider them well in all their relations. Science has been brought to bear upon the best practice, and the two united showing the best way to make our soils yield the greatest crops, how to preserve and manufacture these to make them most palatable and healthful for use. Researches in statistics of the quantity of corn grown and its prices in foreign countries, and whether the article can or cannot be sent abroad in the shape of grain, flour or meal, and sold for a price to remunerate the grower and manufacturer for their outlay. I should like to have given some of my views on one or two of these points, and particularly that of growing Indian corn. I have seen much of it grown and on good soils, and by those called good farmers, and have grown some myself—not that I should think of adding much or any light to what has been shed upon this branch of the subject. Our time, though, has expired and we have much miscellaneous business before us. I will defer what I have to say on this head for some other meeting of the Club. Before I set down, I should like to add my feeble testimony in favor of the plan recommended by our President and Chairman for the use of Indian corn. It certainly is not inferior in importance to any that has been this day considered. First, it would be putting it in the power of every class of our community, poor as well as rich, to enjoy a luxury of the most delicate kind, high-flavored and nutritious, in the shape of green corn at all seasons and cheap. Second, if the article came into general use, as no doubt it would on being well understood, the farmer and gardener would be benefited by growing a larger quantity and of a kind more fit for the purpose and sure of a ready market at a fair price. The tin-man who makes these air-tight cases to preserve the corn in after being well dried, would have more to make, if the demand for them is greatly increased and at a fair price. Here are three branches of the industry of our country materially benefited by the operation. Then comes the consumer for his share of benefits, for instead of the article being 50-100, which it now readily commands, it would probably be as low as 25-100, as the whole country would grow, prepare, and consume more or less of it. Not the least of all these advantages is, that this last price will cause it to reach the poor man's table, and enable him to enjoy a choice healthy luxury if he pleases, as well as his rich neighbor.

REPORT OF CATTLE SALE.

On Wednesday last, March 26th, the improved dairy stock of Mr. Thomas Bell, comprising short horned and crosses from them, with the native and Amsterdam Dutch, was sold by auction on the farm of that gentleman, at Morrisania, Westchester co., N. Y.

The day was particularly pleasant, and when the sale commenced, at 1 o'clock, there were some four hundred persons on the ground.

A catalogue containing name and pedigree of each blooded animal assisted materially in selecting from a stock of considerable celebrity, and as no reservations occurred, all purchasers were placed upon equal footing.

The graded stock was first introduced; all bore strongly the mark of attention and care bestowed upon them by their owner. The list consisted of 43 cows and heifers, 11 of which had calves by their side, by "Amsterdam." Their average age was 5 years and 5 months, and average price $51.

After they were disposed of, an abundant supply of substantial refreshments was served, when the sale again opened on the native stock, comprising 21 head, one-third of which was fresh, the remainder half milked out. Average age, 7 years and 3 months, and average price $26 20. Thirty-five head of native cows, 2 pair of working cattle, 6 imported Leicester sheep, and hogs of various breeds, followed. The working cattle sold for 145 and $155 respectively, the sheep $25 each, a fine imported eicester ram $50, and 3 full grown imported hogs averaged 6. Total amount of sales, $6,003.92.

Mr. Bell will shortly leave for England, where he intends purchase, and introduce into the United States the very best stock of that country.

GEO. S. RIGGS,
J. A. BUNTING.

American Institute Rooms,
New-York, March 29th, 1851.

Mr. Fleet desired to be informed whether we can send our corn to England as cheaply as it is sent from the continent of Europe.

Prof. Mapes.—Yes! when we give the crop a fair chance. We can have one hundred bushels of shelled corn from one acre, if we use the present well-known applications of manual labor.

Grape-cuttings from Dr. Underhill, of Croton Point, and Prof. Mapes, of New-Jersey, and apple and pear grafts, also from J. W. Olmstead, of Staten Island. Seeds (47 kinds) from California, were distributed among the persons present.

A cake made in the family of Gen. Chandler, under the direction of his lady, was tasted by all the members, and pronounced of superior quality. It is of Stafford's Indian corn meal, and made thus:—To a quart of milk, nearly boiling, add and stir in thoroughly, as much of Stafford's meal as will render the mass thick. When it is somewhat cooled, add two eggs well beat up, up, and stir in perfectly—it is then ready for the oven.

Subject for next meeting—Cattle exclusively.

The Club then adjourned.

AMERICAN INSTITUTE,
Farmers' Club, April 8th, 1851.

Judge VAN WYCK in the chair. HENRY MEIGS, Secretary.

CATTLE.

Mr. Pell, of Pellham.—Perhaps there are no animals used in our domestic economy more readily distinguished from all other breeds of the same class than the Devon. For example, the horns of the Devon bull should be yellow, not particularly thick near the head, and diminishing gradually towards the points; the eye is peculiarly bright, clear, and particularly prominent; the forehead is indented, not large, and flat; the cheek small, nostril high, nose yellow, neck thick, the skin thin, and covered with curly hair, which curls more or less according to the condition of the animal. Some of the Devon breed have a smooth, fine, and glossy hair; but those possessing the curly coat are generally preferred, being considered stronger, and better feeders. The head of the ox is smaller than that of the bull. The cow, ox and bull differ very much in size; the ox being far larger in all respects than either of the others; the bull is medium, and the cow much smaller than either. The action of the ox is free, and he is quicker in his movements, than any other breed; his legs are unusually straight, and the bones below the knee are quite small. The tail is precisely level with the back, very seldom elevated, and never depressed; it is long and tapering, with a larger bunch of hair on the end than is usual with other breeds. The skin is exceedingly elastic, soft, and thin. For agricultural labor they are eminently superior, being docile, stout, good-tempered, and honest. They have a tendency naturally to acquire flesh and take on fat. On this account, as well as for their other good qualities, they should be highly prized. They may be worked from two years old until they are six, after which they may be fed twelve months, when they are fit for the butcher. They fatten faster and consume less food than most other breeds, and their flesh cannot be surpassed by any, as the following comparative experiments, made by the Duke of Bedford, will show. Six animals were fed from November 16th, 1797, to December 10th, 1798:

	1st weight.			Gained.		Consumed		
	cwt.	qrs.	lbs.			Oil cake. lbs.	Turneps. lbs.	Hay. lbs.
1. Hereford,......	17	0	1	24	3	—	2700	487
2. do	18	1	0	41	5	423	2712	432
3. Devon,........	14	1	7	45	4	438	2668	295
4. do	14	2	4	64	6	442	2056	442
5. Sussex, ...	16	2	0	45	4	432	2655	392
6. Leicester,......	15	2	14	40	2	434	2652	400

The color of true Devon cattle must be a bright red; any departure, as the slightest intermixture of white, even a star in the forehead, is considered at least an indication of mixture of blood with some other variety. I would not advise my agricultural friends to run upon this breed of animals, except for beef and working cattle; in these two respects I consider them superior to any breed known; but for milking qualifications they are certainly inferior to other breeds. The Devon cow is small, comparatively speaking; she has a cheerful countenance, thin jaws, clear, full eye, yellow muzzle, and no dewlap; she is good tempered and docile; but her milk is deficient in quantity, though it is very rich; and on account of this latter quality, some good judges have given them the preference for the dairy, taking, I imagine, into consideration their facility of fattening and acquiring flesh; compensating in a great degree for deficiency in quantity. The quality of yielding large quantities of rich milk, and fattening easily, is a combination rarely found in any breed of animals. Proper and judicious feeding is indispensably necessary, not only with respect to the Devon but all other breeds. Our farmers generally speaking, cannot be accused of erring as far as overfeeding is concerned. It must be a self-evident proposition, that a disposition to become fat, cannot possibly develope itself until the animal is fed more food than is absolutely necessary to support life. Young cattle are almost always restricted to just sufficient nourishment to support nature, and keep up their growing constitution. This management comes from an erroneous conviction acquired by farmers, that mature aged cattle only can be fattened. I have seen two and a half year old steers sold for one hundred and forty dollars each; this can only be accomplished by proper management from the birth of the animal until that age. Young cattle that have been stinted by insufficient and improper food, rarely if ever turn out advantageously to the farmer.

The Devon breed of cattle are more extensively cultivated in Connecticut for oxen, than in any other State. I have owned for the last ten years several very fine pair of perfectly matched cattle raised in that State; and I have uniformly found them free, active, quick in their motions and little inferior to horses for all the usual farming operations. An animal intended for use should have certain characteristic points which are essential; and first, the feeding qualities should be determined; a round, thick bone indicates a bad feeder and corresponding inferior produce of flesh. The bones generally should bear a small proportion in weight to the flesh, and the bones of the head should be fine and covered with skin and muscle only. The neck should be small and short at the joining of the head. A full, bright and prominent eye is an indication of a well bred animal and fine bone. A calm expression of the eye indicates a patient disposition, and is a favorable characteristic of a good feeder. A perfect judge of cattle can determine the feeding qualities of an ox by the state of the skin which they call the touch. A firm, thick skin indicates a bad feeder and an indisposition to take on fat. A flabby skin, on the other hand, denotes a weak constitution. The body of a fat Devon ox should fill a parallelogram, taken longitudinally vertical, transversely vertical and horizontal; and in order to possess this configuration, the back must be perfectly straight from the shoulder to the tail, the tail must fall perpendicularly from the line of the back, the rump should be filled out, the stomach should be straight and filled at the flanks, the ribs must curve in and be at right angles to the bones of the spine, the loin bones should be long, broad and well filled. These are the prominent points which determine a well-fatted Devon ox.

Mr. Blakeslee said that heretofore great art and deception have been used by individuals to procure premiums on stock; and, worst of all, those who did not raise the stock managed to get the reward of merit due wholly to the intelligent, careful and industrious man who breeds the animal.

As to the Devon breed, we know its value; but why should we not use and improve on all other breeds? The ox was made for the use of man—to work for him, to feed him and partially clothe him. The ox is nearly indispensable to work the stony soils of New-England, where he is worth more than the horse, for ploughing, &c. As to the milking qualities in cows, we must look to the points in the male, as well for that as for working powers. We must examine the male at from four to six years of age—then almost any sensible man can see his points, but it requires close looking to see them when the animal is young. I am willing to say that in good breeding of animals I have been fortunate. The great art is to breed a stock which continues to improve always, There must be broad breasts, legs well spread; there is no lack of wind—there is muscular power; and I think any member will see in these a good milker. Where such a cow gives a great mess of milk her flesh is apt to run off; but next spring, if you prepare well, she will take on flesh as fast as she lost it. The best beef is the artificial flesh you put on—the natural flesh is not good. The cows from that fine bull "Matchless," (a Devon) proved good milkers. I am satisfied that we must look to the male animal, as also in the sheep. I have crossed the weak Saxony with the merino buck and found the superior quality of the wool of the merino prevail. I want to see at your cattle show our entire best stock of animals, then you will easily see what improvement is. Besides our Red Devon, we have what is called an Eaton breed, which has been crossed with Devon, and our red stock show more of the Eaton than the Devon. Both the Eaton and the short-horned Durham breeds have altered our original stock. They all have a white spot on the belly. We apply to the American Institute to do what is necessary and right to encourage the meritorious breeder of stocks, as well as the real working farmer for agricultural merits. I know something of stock, but I have come here to learn from others, who, in many things, no doubt, know more than I do. Let me conclude by saying that as to the various breeds of stock I do not wish to exclude any one breed. Let all of them and their actual breeders stand by their merits.

All animals are apt to bear uniform marks when wild. The wild turkey has always the same marks. If you breed from a bull without spots, not one in twenty of his calves will have them. Horses are much more liable to marks than cattle.

Thomas Bell, of Morrisania—A full blooded creature must have the right color. I saw white spots on the Devons thirty-five years ago. My finest Devon cow had the white spot. I have just sold out my entire stock. I speak from my own experience. I am not now interested in any stock whatever. I am going to England in a few days, and I mean to look about there and bring over a new lot if I like them. I prefer the Durhams. Those that are pure have red and white spots on them, but not be brindled. The Devon breed is good and bad, but as to milking qualities there is no comparison besween them and the Durhams. I have crossed the best native cow with the best Durham bull and produced my best milkers. I do not think that we can introduce any breed as good as the Durham as to milk. In the English dairy, nine quarts is an average per animal. I had fifty head in my dairy, graded stock, the milk average has been over nine quarts. Ten of my graded were equal to fifteen of the general run. My neighbor, Bathgate, says so. We cannot make our native stock over 500 of beef, while the graded take on 700 to 800, and better beef and better price too. Devons are spoken of as very superior working cattle. I have had half Durham and natives, that had the quick-step, and looked upon them as being superior. Worked six years, ploughed as much as a pair of horses, and as beef gave 1200 pounds a-piece. I never knew a native cow to be a great milker, but my oow, *Old Judge*, who, in eleven years, gave me eleven months in the year, an average of *twelve quarts a day, which I sold at four cents a quart!* She had belonged to Judge Van Buren, who sent her to market, and to be broke, for she wanted it, being said to be unmanageable. I broke her.

Mr. Nash—Tell us how?

Mr. Bell—I tied up her right fore-leg. She kicked no more. She gave me eleven calves.

Mr. Meigs said that the peculiar red stock of New-England cattle was descended from the Red Devons brought over by the first settlers, many of whom, naturally enough came from Devonshire, which is next to what is called in England, the *Land's End.* That was the jumping-off place of my ancestor Vincent, and his red bull and cow.

Something has been said of the prevailing colors of cattle. We know that in the earliest days of Rome, the pure white cattle existed in the Italian States. A few years ago, the late George Bruen brought from thence to Perth Amboy, some of those beautiful animals—so ornamental to the green pasture. The red color of our Devonshire cattle brought over here two hundred years ago is still the same.

Lewis G. Morris, of Morrisania—I am requested by the Chairman to say something upon the cattle question, in which I take a deep interest. But I come here seeking for information, especially relative to Devons, which it is generally conceded are very good workers, fine quality of beef, color generally bright red, they bear heat well, they are of comely appearance, but are not considered the best dairy breed as to quantity of milk. The various breeds are encouraged in England for the different districts, soils, &c.—such as give best work, or beef, or milk, &c. The Short-horns, Ayrshire, Highlands, Herefords, *No Horns of Scotland*, Alderneys, prove to be the best in certain sections of the country. Each breed is best in its proper location—the Devon in England, the Ayrshire in Scotland. In our country we possess all kinds of lands and climate which we must suit with proper stock. We have as good dairy stock as any country. Results have shown it. The Highland cattle would thrive on our Catskill mountains. We shall excel in the course of the coming fifty or an hundred years.

Prof. Mapes apologised for not taking part in this discussion of the day, as he professed not to understand the subject of breeding cattle, except so far as published, and that not tested by positive experiment. He was aware that remarks by a mere theorists, on a subject so peculiarly practical, were calculated to perplex rather than to elucidate facts. He would like, however, to state an hypothesis which, at the same time, would give evidence of his want of knowledge, and offer a course of experiment worthy, perhaps, of the attention of cattle breeders.

It is well understood by physiologists that animals breathe for the purpose of supplying a definite amount of oxygen gas, and hence, when the atmosphere breathed, is dilated, as on the mountain top, a proportionally larger quantity must be inhaled to supply the same amount of oxygen, which would result from the reception of a lesser inspiration of the atmosphere of the valley. Nature has so configured the lungs of animals as to enable them to expand and admit larger inspiration proportionate to the increased inspirations during ascent, a long continuance of which causes an enlargement of the chest, with proportionate increase of breadth, strength, &c.

Audubon, Wilson, and other ornithologists, inform us, that birds of a habitually high flight, have larger air vessels than those who float at lesser altitudes. The same truths apply to other animals. Thus, the broad-chested hardy mountaineer enjoys his peculiar strength and security from pulmonic affections, rather from the altitude of his dormitory, as compared with the level of the sea, than from his occupation or peculiarity of food. The lungs of a bear from the mountain, as compared with those of the valley, will be found larger, and even the air vessels of fishes in mountain ponds are much larger than those from the lowland rivers. Inhabitants of the city of Mexico, which is 9,000 feet above the sea, are never pulmonic, while consumption is very prevalent in the low grounds of Mexico. I am well aware that by judicious breeding, with a view to increase the size of the chest of animals, that this desirable result has been to a fair degree attained, the question to which I now wish to call the attention of the practical gentlemen present, is whether young male animals reared at high altitudes, and consequently having broad chests, do not render this property hereditary? if so, the remedy is readily at hand. The fact that all cattle reared on mountains have large chests, has not been disputed. He also, in the course of his illustration of these facts, stated, that if we ascended a hill, carrying in one hand a small balloon filled with atmospheric air, and not elastic in the texture of the coating, it would burst with very inconsiderable alteration of elevation, and this is to be accounted for from the lessened weight of atmosphere surrounding the balloon and consequent expansion of its contents.

A balloon filled at the mountain top, and brought into the valley, will be found to have lessened its diameter.

Prof. Mapes also proposed as a subject of our conversation at our next meeting—"The proper mode of feeding cattle, and the management of their manures in the stable and in the compost-heap." He was induced to make this proposition from the well known differences of results, in relation to their profit, between the feeding of cooked and uncooked food, fermented or unfermented grains, and in the use or disuse of the different root crops for this purpose. He also stated that he knew from experiments, that organic matter requiring to be decomposed by admixture with the fluid excretia of animals, would require but one-twelfth of the amount, if received while containing the animal warmth, instead of throwing the fluid excretia cold from a cistern on muck or other matter to be decomposed. He also referred to the fact that an animal incased in a varnished bag, tied about its neck, leaving the head free to breath the pure atmosphere, would die in a few hours. The gases given off at the surface of the body should be got rid of, and in cold weather it is difficult to do this by ventilation; therefore such materials should underlie the bedding of animals as are not only capable of absorbing the fluid excretia and rendering them inodorous, but also of absorbing all those gases given off from the surfaces of animals, which are hurtful to them, but are beneficial to plants. Animals fed in the stable so arranged will fatten on a less amount of food. It is not difficult for us to imagine that our own aliment, if eaten while we were surrounded by an atmosphere of deleterious gases, would not furnish the means of continued health.

Judge Van Wyck.—I believe our American native cattle, with care in crossing the best breeds we have, with and among each other, with attention in rearing and feeding them, for milk and fattening qualities, are equal to any in the world, and for work, if properly managed, better. Why should they not be? They originally came from England, where the best in the world are now to be found. Our Puritan forefathers when then came here some two or three centuries ago, brought, among other things, their neat cattle; a portion of these, no doubt, consisted of some of the best breeds of England of that day. Since that period England has improved her cattle much, and so have we. If she has gone ahead of us in improvement, it has been owing to the great pains she has taken in crossing her best breeds, distant and near, with each other, and the great care she has bestowed in keeping them, such as feed, shelter, &c., &c. I maintain, though, that whenever this has been done in our country, we are fully equal to her. I will show this by statistics taken from the best English and American authorities, especially as relates to cows in their milking qualities. The average produce of the best dairies in Great Britain is from six to eight quarts a day the season. If butter and cheese are run upon from 150 to 212 pounds of the former, and from 350 to 500 pounds of the latter. This differs very little from the average of some of the best dairies in our country, so little as not to be worthy of notice. Cases occur in both countries of a much larger produce, and here too the average extra produce will be found nearly equal, with one exception, the famons Cramp cow of Lewis, in Sussex county, England, that went far ahead of any thing known in the world before the period in which she lived (1808) or since. The improved Durham breed, which seems, with some, not only in England but here, to claim pre-eminence over every other, commenced in the valley of the Teeswater, Durham county, some years ago, by crossing them with the smaller but more hardy Scotch breeds, which fattened quick, gave less milk, but rich in quality, were easily kept in good condition on the short, sweet, nutritious pastures of the high grounds of Scotland. The unimproved Durhams, before this improvement took place, were remarkable for nothing but the quantity of their milk, not even of symmetry of form, poor feeders, fatteners and workers, and of quite a delicate constitution, could not stand hardships. This cross improved them wonderfully, and they soon became famous in the annals of stock husbandry in Great Britain.

The improved Durhams were soon carried further south in England, and the Devons, the Alderney, and the Leicester, and several of the best breeds here were crossed by them, which improved them still more and placed them on a still higher eminence. Before this first Scotch cross, the best breeds of England were considered far superior to the Durhams in all the qualities of a good animal. To this day in England, and also here, the original Durham blood often shows itself, their milk although abundant is thin, nothing like as rich as most other good breeds, they are delicate and require more feed and care to keep them in a thrifty, improving condition. Hence without this extra care, they would soon loose the title to the name of "*Improved Durham.*" Still they are an admirable race and possess some excellent qualities which some other good breeds do not. This race it is here maintained might be further improved, in our country, by crossing some of our best breeds with them, such as our American Devons as our red cattle are called, or any other good breed as we have numbers of them, whose good properties are known and been proved by years or ages of profitable use and service. By such a cross the Improved Durham might no doubt be further ameliorated, especially in the original defects of delicacy of constitution and thinness of milk, and this would appear more striking in the second or third generation, after the new mixed race gets enured to our climate and habituated to the kind of feed and care here bestowed upon them. These circumstances from what I have seen and heard have considerable influence on the health and thrift of neat cattle, air, water, or such as they have not been accustomed to, often affects their health. Our western States, especiallp Kentucky and Ohio, have for some time cultivated this Durham breed, or this more than any other, and they find that it improves in the second or third generation. They are not so delicate in their hoofs; they are subject to a disease called *foul hoofs;* not so often affected in the liver, which latter is ascribed to the water. The old native breeds are scarcely ever affected with these complaints. Our western friends have suffered at times from these causes, especially when driving their cattle to a distant eastern market. I suppose though ultimately they have been gainers by introducing the Durham breed among them; still I think, if at the time they went to the great expense of importing this breed from a foreign land, they had brought from the North some of its best and more hardy breeds, like the American Devons, and crossed them with their natives, they would have been greater gainers. Such a race would have been sooner acclimated and habituated to the changes of air, water, feed and care, than the more delicate, thin-skinned Durhams, and at the same time have possessed properties as milkers fully equal to the latter, as fatteners very little inferior and as working cattle far superior. The English Devon are considered by all the best workers in England, and, when crossed by the Durham, equal to these in quantity of milk and far superior in quality. These circumstances, with others, show clearly an identity of race in the English and American Devons. I have known and heard from most unquestionable sources of cows, in by-gone years, coming from the common herds of our country, some of the most ungain appearance, almost unsightly, giving no indications of the milker except in bag and milk vessels, when well fed and cared for about the time of calving and after, giving from twenty-two to twenty-six quarts of rich milk a day. I have also known to come from such herds cows possessing symmetry of form and other indications of good milkers, to yield with good treatment from twenty-nine to thirty quarts a day, the season, of rich milk. These cows, it is believed, had not a drop of Durham blood in them, nor any means of acquiring it. The owner knew nothing about the race they sprung from nor cared; they knew their cows gave them large quantities of good rich milk; and they tried to have as many calves from them as they could, by crosses from the best breeds in their own and neighboring herds. The famous Cramp cow of England mentioned, it is believed, had not a drop of Durham blood in her. She was purely of the Sussex breed, and these were never considered great milkers, only fair workers and fatteners. In 1808, her best year, this extraordinary cow produced 5,872 quarts of milk and 675 lbs. of butter. These, it is said, are all exceptions to the general rule, and, according to the maxim applied on such occasions, *prove or strengthen the rule.* It is fair, perhaps, to apply the rule to England, where the exceptions, as far as we know, are very few; but in the present case with us, where they are so numerous as to make it a doubt whether they are exceptions, we should be less rigid in its application. Where there is a doubt let our country have the benefit of it. If we had began some years ago, as they did in Great Britain, to refine and purify our best breeds by repeated crosses with each other, we might have had a race now more perfect, perhaps, than the *im-*

proved Durhams. We had as good a foundation to make the experiment upon. Our friend Mr. Blakesley, of great experience and knowledge of the best stocks of our country, and who proposed this question, says he has raised from an American Devon bull and good native cows stock that would compare with any, no matter where bred and reared, either as milkers, fatteners or workers.

Prof. Mapes then proposed as subject for next meeting, "The Breed of Cattle" and "The Management of Manure in the Stable and the Compost Heap." Mr. Morris seconded the motion. Adopted unanimously.

Gen. Chandler moved to refer the proposed premiums of Mr. Blakesley to the Board of Managers. Carried.

Mr. Nash desired the publication of the Farmers' Club Circular, with every report of the proceedings of the Club.

The Club then adjourned.

H. MEIGS, *Sec'y.*

AMERICAN INSTITUTE,
Farmers' Club, April 15th, 1851.

JUDGE R. SWIFT LIVINGSTON in the chair. HENRY MEIGS, Secretary.

MANURE.

Chairman.—The subjects for consideration to-day are the feed of cattle, and the management of manure in the stable and in the compost-heap, and called upon Professor Mapes to give his views.

The Professor said that he did not pretend to any extensive practice in the care of cattle, but had found that great economy can be used in their feed. One of his neighbors tried two pairs of cattle of equal weight and condition. One of which he fed with cooked and the other raw food—one without and the other with a proportion of roots, and found great advantage in the cooked food. I analyzed the excretia of both experiments and found great difference in favor of the cooked, especially as to the starch. Hogs consume more of the cooked than the raw, but they fatten much faster. As many as forty of my neighbors have followed my advice in this cooking the food as far as it is possible, and they all agree in the profit of it. Of Indian corn, it is found that eighteen and one quarter pounds weight well cooked, are more profitable to the hog than fifty pounds weight of the raw corn. One of those farmers reports that his pork so raised cost him but four cents and a quarter or even less, while that fed with the raw cost him from thirteen to fifteen cents the pound. I recently used two pairs of large oxen to work on my farm; they had to travel about eighteen miles a day in drawing (each pair) about one ton weight half that day's work. I fed them on corn stalks cut small and heated by pouring hot water on them with salt, in a barrel or hogshead over night. Next morning the corn stalks were swelled to their size when green. I added mash on top. They always relished their feed more than the raw, kept in flesh and strength throughout the summer, and I sold them for two hundred dollars the pair.

I have experimented rather largely for the last four years, in manures on my farm, not only with all known special manures but all others, particularly with salt muck from the meadows near me. I bought meadow land convenient to me for five dollars some acres, up to ten dollars for others, per acre. I dug out the muck in order to make ditches as well as manure. I have drawn on to my farm from ten to fifteen hundred wagon loads of this muck, and have made it capital manure.

I left it exposed to frost one winter, then I added chloride of lime and carbonate of soda made from the refuse salt from packers of pork and hams, and decomposed by lime. This salt contains some oleaginous matter. I put about four bushels of these, mixed to 128 cubic feeet (one cord) of the muck which had been exposed one winter to frost. The muck is a rapid and great absorbent and deodorizer, so that it takes up and retains the ammonia of all these matters. I also dug a gulley in the stable three or four feet deep and as wide. I used Rosendale cement to make the bottom water-tight. I put into it muck, and over that litter. The urine of the oxen passed through the litter into the muck; they laid down upon it, and the heat of their bodies rendered it excellent manure in ten days. I then removed that and filled the gulley as before. I removed all to sheds. Let, as is customary, the urine run into a cistern, and you will find it less active in the compost by as much as twelve to one. My mode has another very valuable result: The muck absorbs all the unpleasant gases of the stable, which ought always to be as free from them as the pure air of the pasture; but by ventilation be as much as possible like open air. The muck is as great a deodorizer as charcoal, and saves all the ammonia to be given out to vegetables, as much as they want; and it is also in soil an excellent divisor. I have found the spent lye of the soap-boilers a capital article to mix with muck; it has in it salt which is necessary to destroy the grubs, and the soluble silicates so indispensable to the formation of the external covering of stems of grain, corn, &c., for their needed strength. Salt kills weed-seeds. Hog-manure without salt, makes club-footed cabbages. I use on land that has none from 6 to 20 bushels of salt per acre, with great benefit. Lime is used moderately by plants as part of their pabulum, and most soils contain sufficient for this purpose, but larger quantities are required for the purpose of decomposing the inert matter with which it comes in contact. Where you have put large quantities of organic matter on the land there must be lime added. Some say their land is tired of lime. Not so in the case I have just stated. In New-Jersey, the green sand marl found at one foot or more below the surface, has been put on land worth ten dollars an acre, and made it worth one hundred and fifty dollars. From twenty to one hundred and sixty bushels an acre are used. This marl consists in part of greenish granules, containing potash. The proportion of potash in some of them is fourteen per cent. This marl is so perfectly insoluble in water that it is as perfect when taken from streams of water as from the earth, the copperas it contained being the only constituent washed out of it. The county of Monmouth will be enriched for a time by it, but as it tends rapidly to aid vegetables in taking away the organic matter, it will soon show the necessity of adding that again to the soil. The same rule is applicable to any other element of soil. The green crop derives its carbon from the atmosphere, as demonstrated by their increase of weight and size, in given quantities of soil, without diminishing the weight or quantity of the latter. Our marshes as you can see at a glance, all came down from our hills, bringing along with them abundance of tannin, among other matters, so that until the tannin be taken out it is worthless as manure. Take raw hide and add to it tannin, and you have sole leather. Take out the tannin, and you have the raw hide again. The muck of these meadows is of a light spongy character, so that liquid manures filter through it, and leave all but the pure water in it. The carbonaceous matters in soils is formed by combustion as perfect as fire, but it is that slow combustion called *eremacausis*. The particles of good soil are observed (by powerful microscope) to be all coated with the carbon which gives soil the dark color we see in good soil. Cleanse the particles from their coat of carbon and you will behold the color and sterility of the sandy desert. The volatile portions of manures are retained by organic matter and alumina. The compost manure I make is twice more durable than guano. Plants provide excretia good for others, but not always good for themselves. Take a cabbage out by the roots and wash it in a tub of water, and the flocculent matter left in the water, if poured on another cabbage, will kill it, while it is pabulum for other plants. The onion gives off no excrementitious matter, and therefore thrives year after year on the same spot.

Our farmers make up their manures in layers of various material, and after a time fork all up together. Away flies the ammonia! A far better plan is to have a cistern under a shed, into which all the fluid matters may go; and, if wanted add water. About once a week pump this on the compost heap, and there will be no fire fanging. Put into the cistern spent lye of the soap-boilers, to give the soluble silicates to your soil to form the coat of the grain and corn stalks. All the waste of the house and farm should be added to the heap; dissolve bones in dilute sulphuric acid and add that. Make holes in the top of the heap with a crowbar or something else; fork it so as to make it retain the fluids a little. Cubical nitre, saltpetre, are very important to some plants. Fill two barrels with Rockaway beach sand, in one of which put the sand thoroughly mixed with one per cent of alumnia and one per cent of carbon. The fluid manures of the barn yard, if poured on these barrels of sand, will pass through the one filled with simple sand unaltered, while that passing through the other barrel will be deodorized and limpid water only will pass through, free from ammonia and the alkalies. This fact accounts for the purity of water in wells, for without these effects in the soil, wells would contain a saturated solution containing all the soluble results of decayed nature.

Meadows sometimes run out in a few years, but in well subsoiled and underdrained lands this never takes place, as the roots cannot meet (in soils so prepared) with hard subsoils not disintegrated, and it is only under such circumstances that roots cease to tiller.

Air passing through disintegrated soils deposits ammonia and moisture, and thus secures against drought. Plants cannot be supported by additions of *inorganic manures only*, and thus the manures of Liebig, composed of the materials found in the ashes of plants, failed, not because they were not wanted, but because a portion of organic matter must also be present in the soil to enable it to receive and retain the required additions from the atmosphere.

Hair is of great value to the celery crop. When the plants are pulled up for use, you will see some of the hair always attached to their roots. The hair furnishes the albumen wanted by this plant. I put in the compost heap spent tan, leather chips, salt and lime; mix all perfectly, and in about sixty days I find the leather chips converted to a brown powder, and the tan fit for manure. Inorganic substances will not alone raise plants. Clover derives nine-tenths of its supplies from the atmosphere, from which it sends off the oxygen. Raise clover in a pot, and it takes from the air more in weight than the soil in the pot. The sand of Middlesex, Jersey, mixed well with muck and other manures, becomes a magazine to receive the ammonia and carbon from the air.

The construction and the use of tiles proper for underdraining is a very important matter, not more for low than for high fields.

I made three underdrains on my farm, on a sloping field, and dug a hole down to one of them, and put a piece of stove pipe, by way of chimney, to try what current of air would be found; and, as I expected, there was a constant up current. Over these drains there has always been a superior growth of plants, because the air from the drains is always rising through the soil and leaving its ammonia and carbon in the soil, this also prevents all injury to plants from drought, because the air constantly supplies moisture. Take a demijohn and expose it to the heat of the sun at 120 degrees Fahrenheit and yet you will find moisture in the air contained in it. Mr. Wellington, of Massachusetts, who is present, drained a meadow at an expense of one hundred dollars an acre, and found it profitable becase he had from it four tons of hay, when before he got but *one ton !*

Judge Van Wyck expressed doubts as to the profitable use of draining in this country as a general thing, it may answer in some special cases.

Prof. Mapes remarked that England imported the inorganic materials for manure in two hundred and fifty-eight ships last year. How rapidly have our wheat crops sunk within a few years past! And why? See everything carried off the fields; all the wheat, immense herds of cattle, hogs, animals of all kinds; all their bones, &c., forever lost to the lands which created them. Let us take half a farm and do to that all that is done to a whole one, and all the dreaded expense of proper manuring and working will be found overpaid by such crops as a just man of common sense or of science rejoices to see. Dr. John Woodhull, by scientific farming, has brought up his crop of wheat from *nine bushels to fifty-seven bushels on one acre!*

The eleven chemical constituents of soil must have added to them the organics. The learned professions ought not to outrank the farmers. They never can outrank an intelligent one. Some of my neighbors, ignorant of the use of common salt in raising plants, come to me for cabbage plants. I supply great numbers. Charcoal dust, which was thrown away but a few years ago, (five) now sells for one dollar a load. Those who used to pay six cents a load to have it carted away as a nuisance, have learned the value of one of our new agricultural discoveries. We cannot within fifty miles of this city, afford to raise hay. Why, sir, instead of hay, raise almost any other crop. Try Lima beans, now of greatly increased and increasing value and demand. By proper management you can have off one acre *two hundred and forty dollars' worth.* Our farming is generally suicidal. The very bones now so valued, were thrown off the dock within the last three or four years. Now we are glad to get them at a dollar and a half per hogshead. I have visited one hundred and five farms, and those that try the improvements spoken of, pay. Mr. Rennie's farm raised by it 120 bushels of corn where he before got twenty bushels only, and so in other products. He had applied the right amendments. Within the circle of ten miles round my place, it is judged that the increased value of all the crops was twenty-five thousand dollars last year. Where potash and phosphate of lime have been applied for ruta bagas, it turns out that the root is more solid, and keep much better, as well as a greater crop. Mr. Scofield, of Morristown, raised last year, by these amendments, *fourteen hundred bushels of them on an acre!* On soil so prepared they do not run to leaf like lettuce. The same results are found in carrots, which have so lately become a highly valued crop—equal to oats, bushel for bushel—and what a difference in the amount of crop per acre? Parsnips, too, gave seven hundred bushels an acre, which sold for fifty cents a bushel.

Judge Van Wyck remarked as follows: Prof. Mapes has given us an account, and no doubt a correct one, of what is called in Europe, high farming, or farming as respects manures, tillage, drainage, &c., according to science and the best practice, not only here, but in Great Britain. His knowledge of chemistry enables him to apply this with success to farming purposes, and to call to his aid in practice the qualifications of a good agricultural chemist. The account he has given of his operations and experiments, on his farm in New-Jersey of 40 acres, situated about three miles from Newark, is very interesting, and may prove highly beneficial to most farmers who own farms in a similar locality and of similar dimensions. Some of his disquisitions on soils, manures and plants, their constituencies from analysis, what soil may be deficient in, and what manure it may require of the organic or inorganic kind to make plants or particular plants grow thriftily, and mature well upon it, may be highly useful to farmers in every part of our country. The location of Professor Mapes' farm gives him advantages, which farms situated far in the interior, or some distance from the ocean, and our large cities have not. His farm is near the famous salt meadows of Newark, which are inexhaustible in his favorite manure, salt muck; he can get any quantity of it at comparatively little expense, that it would cost others, living much further from it, even in the State of New-Jersey. This is, no doubt, a first rate organic manure, and to prepare it, as he describes he has done, must contribute much to the growth of plants and improvement of soils. It would do considerably more in improving these, if it should be conveyed to a distance in the interior, and put upon land that has none or very little benefit from the salt air and salt water products generally, some of which act powerfully as manures. Here it would be new, and would take hold of plants with more force, and these would grow accordingly, being supplied with what they most wanted. The farmers far in our interior must depend principally upon barn or farm yard manure, they cannot go to the labor and cost of carting very far manures of any kind. Most farms in every locality have on, or near them, fresh water deposits, made from small streams and in swamps; these, with the scrapings and scourings of ditches, pond holes and stagnant pools, is the only muck within their reach. The offals, drainage and refuse of the household and homestead, generally everything in the shape of decaying, useless vegetable and animal matter on the farm at large, must be collected and thrown with the muck into the compost heap of the barn yard altogether, if properly preserved, mixed and applied, make an excellent manure, and accessible to the inland farmer.

Professor Mapes has said considerable in favor of special manures, or such as chemists prepare—soda, chloride of soda, potash, the nitrates, the sulphates, phosphates, and a variety of others, with their different combinations according to the settled principles of chemistry. These are all very good in their place, but they are generally applied for a specific purpose, when some particular ingredient is supposed to be exhausted, or wanting in soils, like phosphate of lime or bone earth, potash, soda, &c. Here the identical article is procured, and used to supply the missing ingredient, and generally nothing else, although other things may be wanting. This is obtained at some expense and trouble for the farmer; besides he may be deceived; he may not get the article; he may get something else; he has to trust to others; he does not know himself; the person who supplied them may not know; or he may be mistaken, or have intended to deceive him. These things often occur in Europe, in the manufacture and sale of special manures; cautions are frequently seen in their journals and periodicals to the public, against imposition and disappointment in such matters: Agricultural empirics, there, often impose their nostrums under the cover of manure, on the credulous and unsuspecting, much to their detriment. Even the great Liebig, one of the greatest chemists of the day, was mistaken in manufacturing and preparing his famous special manure, which was a compound of several ingredients, and meant as a general specific, to cure diseases and defects in all soils, and furnish each plant with the kind of food it requires. Yet Liebig was mistaken; his special manure was a total failure, and so admitted by most scientific and practical men in Europe. There was no empiricism about Liebig; he was a regular bred, educated and practical chemist, and one of the ablest of the age, and is now if he is living; he committed an error, and if he did another might, especially if he was not quite as eminent in his profession as Liebig. Professor Mapes tells us that if any person who was competent had, after examining the compound and ascertained and added the missing article or articles, that this was easy enough, and all would have been right, and not only Liebig's reputation saved from the effects of the failure, but the profession generally. It is now about three years since this compound was given to the world, and proved a failure. Among the number of eminent chemists of Europe, I should think if the error was corrigible, it would have been corrected long since by some of them, or by Liebig himself. There was nothing to prevent him, if he saw fit. It never has been though, that I have seen or heard, and I doubt whether it will be very soon, either here or in Europe, easy as it may be to effect. Barn, or farm-yard manure, I maintain, is not only the cheapest, but if preserved and composted as stated, and applied at the right time and manner, is the most efficient, for a farm of any size located remote from the ocean and large cities and towns. Farmers so situated are aware of this, and they would not be easily persuaded to expend much or any money in purchasing special manures that they know nothing about, and I am sure they could not be scolded or driven into it. Farm-yard manure is made on their farms; they understand it; it is near them; no money to pay out for carriage, or the article itself; it costs them some labor and time—and what farming operations do not? If a farmer, on requesting advice, is advised by some person in whom he can place confidence, that his farm is deficient in some of its essential constituents, such as lime, gypsum, bone-earth, salt, charcoal, &c.—he puts his finger on the specific article, he knows it and cannot well be deceived in it, procures and applies it. The best scientific and practical farmers of Great Britain are becoming every day more convinced than ever of the great utility of farm-yard manure, properly managed. Professor Johnston, in a late lecture, in substance says, that no good farmer will let his farm pass for any time without a pretty liberal supply of farm-yard manure. Other manures, such as are called special, are used to supply the soil and plant with something that the one is deficient in, and the other, particularly wants for its proper growth. In such a system some things will be omitted, essential, too, for the healthy condition of the soil and plants as any the farmer has happened to use. Whereas farm-yard manure contains a little of everything, more so than any other manure; and different kinds of plants have a greater choice in selecting from such a variety the food they most need. Professor Anderson, consulting chemist of the Highland Scotch Agricultural Society, in a lecture delivered before the Society within the present year, for similar reasons as those of Johnston and others of equal force, says that "farm-yard manure, after all, must be the main-stay of the farmer."

There were some other points in Prof. Mapes' long, learned and animated talk that I should like to have noticed, but for the want of time I must defer for the present.

Prof. Mapes.—I propose to the Club, as subjects for the next meeting—Sub-soil Ploughing and Draining—which was adopted.

The Club then adjourned.

H. MEIGS, *Sec'y.*

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