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LAWS AND REGULATIONS
OF THE
MASSACHUSETTS SOCIETY
FOR PROMOTING
AGRICULTURE.

CONTAINING,

The NAMES of its present OFFICERS and MEMBERS,
List of PREMIUMS, &c.

WITH

Some interesting EXTRACTS from FOREIGN and DOMESTICK
PUBLICATIONS.

BY THE TRUSTEES.

PRINTED AT BOSTON,
BY ISAIAH THOMAS AND EBENEZER T. ANDREWS,
FAUST'S STATUE, No. 45, NEWBURY STREET.
MDCCXCIII.

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TO THE PUBLIC.

THE imperfect state of husbandry in general, in this country, is too well known to require any discussion. This circumstance suggested the origin of the Massachusetts Society for promoting Agriculture.

The farmers of this state, are equal, and perhaps superior, in their knowledge of agriculture, to their fellow citizens in any part of the Union ; but we must acknowledge, that the science and practice of husbandry in some foreign countries, are far superiour to our attainments. One great object of this Society will be, to obtain and publish an account of the improvements of other countries, and to procure models of machines in which they excel. It will attend to whatever relates to rural affairs, and especially to promote an increase of the products of our lands, such as the improvements of soil by tillage, manures, clearing, and draining, the cultivation of such grasses, and other articles, as may be most advantageous to the farmer, and of course to all classes of people, and such as are best adapted to our soil and climate ; the most profitable kinds of seed, with the time and manner of sowing and cultivating them ; the best method of propagating and preserving fruit trees from insects, particularly from the canker worm ; also, the best method of increasing forest trees. The feeding and management of neat cattle and sheep, and the best method of making and preserving butter and cheese.

To

To encourage the utmost attention to these objects, the Society will, from time to time, offer such premiums as their funds will admit. They consider agriculture in its various branches and connexions as highly interesting to all mankind. The wealth and importance of the community, is so intimately connected with, and dependent on the extent and success of agriculture, that every one who is desirous of advancing the happiness, prosperity, and dignity of his country, its commerce, and convenient subsistence of individuals, will lend his aid to this most useful institution.

The members of this Society have no other interest, than the benefit of the human species at large. They consider themselves members in common, of the great family, and expect no other advantage than the satisfaction of being beneficial to themselves, with the rest of the community.

They therefore, in consequence of the charge they have taken on themselves, call in the most earnest manner, on every practical farmer, to send to either of the Secretaries in Boston, all the information which he possesses on any subject connected with agriculture. The Society wish to obtain the modes of practice in different parts of this country, but particularly of this state, that they may publish the same; that one part may be benefited by the improvements of the other. There are many persons in every community, who make improvements that perish with the possessor, merely for want of some place where they may be perpetuated. The Society will feel obliged to every person for their attention and communications, even if they possess nothing more than is generally understood. Every correspondent has a right to withhold his name, but if the names should appear, which the Society would prefer, and the communications contain nothing extraordinary,

traordinary, they may be assured of the gratitude as well as candour of the Society.

All persons elected honorary members, in whatever state or country, have a right to be present at the semianual meetings, in April and October, and are invited to assist, by their communications to the Trustees, in advancing husbandry.

This publication is designed to inform the members, who have not attended the meetings, of the nature of the institution and regulations, and the publick of the general views of the Society, and to make the particular objects of premiums, that have been already determined on, more universally known.

The Society call on every person, who feels inclined to suggest any other objects for pecuniary rewards, to communicate them without reserve, to either of the Secretaries, and as soon as their funds will admit, particular attention will be paid to such communications.

LAWS AND REGULATIONS, &c.

ACT OF INCORPORATION.

COMMONWEALTH OF MASSACHUSETTS.

In the the year of our Lord, one thousand seven hundred and ninety two.

An Act to incorporate and establish a Society by the name of the MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE.

WHEREAS very great and important advantages may arise to the community, from instituting a Society for the purpose of promoting Agriculture, and divers persons having petitioned to this court to be incorporated into a Society for that laudable purpose.

Be it therefore enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, That the said petitioners, viz. Samuel Adams, John Avery, jun. Joseph Barrell, Martin Brimmer, Charles Bulfinch, John Codman, Edward Cutts, Aaron Dexter, Thomas Durfee, Moses Gill, Christopher Gore, Benjamin Guild, Stephen Higginson, Henry Hill, Samuel Holten, Benjamin Lincoln, John Lowell, Jonathan Mafon, Jonathan Mafon, jun. Azor Orne, Samuel Philips, Thomas Russel, Samuel Salisbury, David Sears,

Sears, James Sullivan, Cotton Tufts, Charles Vaughan, and Thomas Winthrop, together with such others who shall become members thereof, be, and they are hereby incorporated into, and made a body politic and corporate forever, by the name of the *Massachusetts Society for promoting Agriculture*.

And be it further enacted by the authority aforesaid, That the said corporation be, and are hereby declared and made capable in law of having, holding, purchasing and taking in fee simple, or any less estate, by gift, grant, devise, or otherwise, any lands, tenements, or other estate, real and personal; provided that the annual income of the said real and personal estate, shall not exceed the sum of ten thousand pounds, and also to sell, alien, devise, or dispose of the same estate, real and personal, not using the same in trade or commerce.

And be it further enacted by the authority aforesaid, That the said corporation shall have full power and authority to make, have, and use a common seal, and the same to break, alter, and renew at pleasure; that it shall be capable in law to sue and be sued, plead and be impleaded, answer and be answered unto, defend and be defended, in all courts of record, or other courts or places whatsoever, in all actions real and personal and mixed, and to do and execute all and singular other matters and things, that to them shall, and may appertain to do.

And be it further enacted by the authority aforesaid, That the said corporation may make, establish and put in execution, such laws and regulations as may be necessary to the government of said corporation, provided the same shall in no case be repugnant to the laws and constitution of this state.—And for the well governing of the said corporation, and the ordering their affairs, they shall have such officers as they shall hereafter from time to time elect and appoint; and such officers as shall be designated by the laws and regulations of the said corporation for the purpose, shall be capable of exercising such power for the well governing and ordering the affairs of the said corporation, and calling and holding such occasional meetings for that purpose, as shall be fixed and determined by the said laws and regulations.

And

And be it further enacted by the authority aforesaid, That the end and design of the institution of the said Society is for the purpose of promoting useful improvements in Agriculture.

And be it further enacted, That the place of holding the first meeting of the said Society, shall be in the town of Boston, and that Samuel Adams, Esq. be, and he hereby is, authorized and empowered, to fix the time for holding the said meeting, and to notify the same to the members of the said Society, by causing the same to be published in one of the Boston newspapers, fourteen days before the time fixed on for holding the said meeting.

In the HOUSE of REPRESENTATIVES, March 7th, 1792. This Bill having had three several readings, passed to be enacted. DAVID COBB, SPEAKER.

In SENATE, March 7th, 1792. This Bill having had two several readings, passed to be enacted.

SAMUEL PHILLIPS, PRESIDENT.

Approved, JOHN HANCOCK.

True Copy, Attest,

JOHN AVERY, JUN. SECRETARY.

RULES AND REGULATIONS.

ARTICLE I.

THAT there shall be a President, two Vice Presidents, a Recording Secretary, Corresponding Secretary, and Treasurer, who shall be Trustees ex officio; in addition to these, six other Trustees shall be chosen from the members at large, all of whom shall continue in office until others are elected in their stead.

II. ALL officers, as well as new members, shall be elected by ballot. The election shall be determined by a majority of votes.

III. THERE shall be two stated meetings of the Society annually, viz. on the first Wednesdays in April and October, the same to be held at 11 o'clock, A. M. at such place as the Trustees shall appoint, of which they shall give notice in one of the Boston newspapers, at least three weeks previous to said meeting.

IV. THERE shall be an annual choice of officers, viz. at the stated meeting in April, in the choice of whom, twenty members shall be necessary to make a quorum; in the transaction of other business, thirteen may make a quorum.

V. IF at any meeting of the Society or of the Trustees, the President and Vice Presidents should be absent, the members present may appoint one from among them to preside at such meeting.

VI. THE President (or in case of his absence) either of the Vice Presidents, with the advice of the Trustees, may call a special meeting of the Society; or whenever written application, with reasons assigned therefor, shall be made by any twelve members of the Society, to the President and Trustees, they shall call such meeting.

VII. THE meetings of the Trustees shall be held at such time and place, as they shall from time to time agree upon, seven of whom, with the presiding members, shall make a quorum for doing of business, except in the case of election of members.

VIII. THE Trustees shall regulate all the concerns of the Society during the intervals of its meetings, propose such objects of improvement to the attention of the publick; publish such communications, and offer premiums in such form and value as they shall think proper, provided the premiums offered do not exceed the funds of the Society; and shall lay before the Society at each of its meetings, a statement of their proceedings, and of the communications made to them.

IX. THE candidate for election shall first be proposed by a member of the Society, and on being balloted

ed for, if the number of votes in favour of such candidate shall amount to a majority of the members present, such person shall be considered as duly elected.

X. THE Recording Secretary shall take minutes of all the votes and proceedings of the Society, and of the Trustees, and enter them in separate books, and shall record all such communications as the Trustees may direct.

XI. THE Corresponding Secretary shall write all letters relating to the business of the Society, and answer all such letters to the Society, as the Trustees shall direct.

XII. THE Treasurer shall receive all monies due or payable to the Society, and all donations that may be made to it, for which he shall give duplicate receipts, one of which shall be lodged with the Recording Secretary, and make a fair record thereof, and from time to time, pay out such monies that may be in the Treasury, as he shall have orders for from the Trustees, and shall annually, and whenever thereto required, render a fair account of all his receipts and payments, to the Society or a committee thereof. The Treasurer's accounts shall be kept in dollars and cents, and he shall give bonds for the faithful discharge of his duty, in such sums as the Trustees shall direct, and with such sureties.

XIII. A COMMITTEE shall be chosen annually to audit the Treasurer's accounts, viz. at October meeting, and to report thereon, at the next April meeting, and the same being accepted, shall be entered by the Recording Secretary in his books.

XIV. IN case of the death, resignation, incapacity, or removal out of the state of either of the Secretaries or of the Treasurer, the Trustees shall take charge of the official books, papers, and effects belonging to the office that may be vacated, and give receipts for the same, which books, papers, &c. they may deliver to some person, whom they may appoint to fill up the office until the next meeting of the Society, at which time there shall be a new choice.

XV.

XV. The present members of the Society, and such as may be elected previous to April meeting, 1793, shall for the present year severally pay into the hands of the Treasurer two dollars, for raising a fund for carrying into execution the designs of the institution; and thence afterwards two dollars annually shall be paid by each member, until otherwise ordered by the Society; the second year to be considered as commencing on the first Wednesday in April, 1793.

XVI. A COMMITTEE shall be raised from time to time, severally to solicit and receive subscriptions for raising of a fund, for encouraging the noblest of pursuits, the agriculture of our country, the same to be sacredly appropriated to that purpose.

OFFICERS OF THE SOCIETY.

HON. THOMAS RUSSELL, Esq. President.
 HON. JOHN LOWELL, Esq. First Vice President.
 HON. MOSES GILL, Esq. Second Vice President.
 JOHN AVERY, JUN. Esq. Recording Secretary.
 OLIVER SMITH, Esq. Corresponding Secretary.
 AARON DEXTER, M. D. Treasurer.
 HON. JAMES BOWDOIN, Esq. }
 MARTIN BRIMMER, Esq. } Trustees.
 LOAMMI BALDWIN, Esq. }
 CHRISTOPHER GORE, Esq. }
 CHARLES VAUGHAN, Esq. }
 SAMUEL PARKER, D. D. }

THE ADDRESS OF THE TRUSTEES.

THE Trustees have agreed to meet once in each month, free of any expense to the Society, for the purpose of receiving communications and promoting the purposes of the institution.

It is greatly to be desired that the community at large, and especially the members of the Society, would engage

gage earnestly in this business, would aid its funds, and make communication of any discoveries they may deem useful, with freedom. The officers of the Society pledge themselves to pay every attention in their power to the great end intended.

Among other measures, they recommend that the members in different parts of the state would meet at stated times, in places convenient to themselves, and invite the aid of others, who are desirous of forwarding improvements in agriculture; and that they would from time to time, transmit to the Trustees, or any officer of the Society, any information they may think useful.

LIST OF PREMIUMS.

1. TO the person who shall, on or before the first day of July, 1795, give a satisfactory natural history of the canker worm, through all its transformations; at what depth in the ground, at what distance from the tree, and at what time they cover themselves; at what season, and in what form they rise from the ground; on what part of the tree they generally deposit their eggs, and at what time the eggs become worms; a premium of 50 dollars, or a piece of plate of that value, or the Society's gold medal,* at the option of the author. If more than one satisfactory history should be given before the first of July, 1795, that first received by the Trustees will be entitled to the premium.

2. A premium of 100 dollars, to the person who shall, on or before the first day of July, 1796, discover an effectual, and the cheapest method of destroying the canker worm, and give evidence thereof to the satisfaction of the Trustees.

3. For the greatest quantity and best quality of compost manure, made in one year, with the smallest expense,

* The Trustees, expecting that many persons will engage in agricultural experiments, and become entitled to premiums, who would be more gratified, by the most honorable testimony of their merit in the power of the Society to confer, than by pecuniary rewards, have voted, that a medal of gold, equal to three guineas weight, emblematically engraved, called the Society's gold medal, be given to them.

pense, and from a farm of the fewest acres under culture, and from materials common to most farms, provided that the quantity is not less than two hundred tons, to be accompanied with a description of the barn yard, or place where made, and the mode of making the manure, a premium of 50 dollars, or the gold medal.

4. And for the next greatest quantity, not less than one hundred tons, 30 dollars; claims to be presented previous to the first day of May, 1795.

5. To the person who shall discover a species of marl, good as a manure, in sufficient quantity to become useful as such, and exhibit a specimen of the same to the Trustees; for the best specimen and largest quantity discovered, 50 dollars, or a gold medal, at the option of the claimant; claims to be presented on or before the first of May, 1794.

6. To the person who shall give the most satisfactory evidence of the best kind of wheat, for this climate, and the best mode of cultivating the same, by actual experiment, on not less than one acre of ground, the gold medal; claims to be presented on or before the first of October, 1796.

7. For the largest quantity of fat beef, fed upon the fewest acres of ground, the quantity not being less than 80 hundred weight, a premium of 50 dollars, or the Society's medal; and for the next largest quantity, not less than 40 hundred weight, 25 dollars, or a silver medal. A particular description of the size of the enclosures, must accompany the claim, with a particular description also of the mode of fattening; claims to be made previous to the first of October, 1795.

8. To the person who shall give the best account, from actual experiments, of the best vegetable food, beside hay, that shall increase the milk of cows and ewes, during the month of February, March, and April, the gold medal; claims to be presented previous to the first of May, 1795.

9. For the largest quantity and best quality of wool, that shall be sheared in the same year, from the smallest number of sheep, not less than one score, 50 dollars, or the gold medal.

10. To

10. To the person who shall within the term, of three years, cut, clear, and bring into grass, the greatest number of acres of wild land, not less than 20 acres; the same to be kept clear from brush, to be well fenced and set off in proper divisions, 50 dollars; claims to be presented on or before the first day of October, 1796.

11. To the person who shall produce to the Society, from actual experiments, the best and most expeditious method of bringing wild land to a state of improvement, and at the least expense, for mowing or pasturing, 50 dollars, or a gold medal; claims to be made on or before the first of October, 1796.

12. To the person who shall produce to the Society the best and most expeditious mode of destroying brush, without ploughing, 25 dollars; claims to be presented previous to the first of October, 1795.

13. To the person who shall produce the best and most expeditious method of making maple sugar, the manner of collecting the juice, with the least injury to the trees, boiling, clarifying, and completely granulating the same, to be accompanied with a particular description of the size and different kinds of vessels used, the expense and number of persons required to manage them, a premium of 70 dollars, or the gold medal.

14. It is required that the communications for which the above premiums are offered, be accompanied with proper certificates from the selectmen, magistrates, or clergymen of the vicinity, or other vouchers to the satisfaction of the Trustees; that they be delivered in without names, or any intimation to whom they belong; that they be severally marked in such manner as each claimant shall think fit; the claimant sending also a paper sealed up, having on the outside a corresponding mark, and on the inside his name and address.

By ORDER of the TRUSTEES.

OLIVER SMITH, *Cor. Sec.*

May, 1793.

COMMITTEE

COMMITTEE TO RECEIVE SUBSCRIPTIONS.

THE Society have appointed a committee to solicit subscriptions, to raise a fund, to be distributed in premiums for the encouragement of useful discoveries and improvements, viz.

THOMAS RUSSELL, *Boston.*
 JOHN LOWELL, *Roxbury.*
 MOSES GILL, *Princeton.*
 AZOR ORNE, *Marblehead.*
 COTTON TUFTS, *Weymouth.*
 SAMUEL PHILLIPS, *Andover.*
 JAMES WARREN, *Plymouth.*
 THOMSON J. SKINNER, *Williamstown.*
 TIMOTHY NEWHALL, *Sturbridge.*
 WILLIAM BAYLIES, *Dighton.*
 LOAMMI BALDWIN, *Woburn.*
 JUSTIN ELY, *West Springfield.*
 LEVI LINCOLN, *Worcester.*
 CHARLES VAUGHAN, *Boston.*
 DAVID SEARS, *Do.*

 NAMES OF THE MEMBERS.

HON. Samuel Adams, Esq.	Benjamin Beals, Esq.
Hon. John Adams, Esq.	Moses Black,
John Avery, jun. Esq.	Samuel Bais, Esq.
Hon. Fisher Ames, Esq.	Hon. Samuel Baker, Esq.
Nathaniel Appleton, Esq.	Hon. Ebenezer Bridge, Esq.
Dr. Nathaniel W. Appleton,	Samuel Blodget, Esq.
John Andrews, Esq.	William Billings, Esq.
Joseph Allen, Esq.	Daniel Bigelow, Esq.
Caleb Ammidown, Esq.	Hezekiah Bissett, Esq.—honorary.
Jonathan Adams.	Rev. Manasseh Cutler,
William Bodman, Esq.	John Codman, Esq.
Joseph Barrell, Esq.	Hon. Edward Cutts, Esq.
Martin Brimmer, Esq.	Hon. George Cabot, Esq.
Charles Bulfinch, Esq.	Andrew Craigue,
Loammi Baldwin, Esq.	Hon. Richard Cranch, Esq.
Thomas Brattle, Esq.	Samuel Cary, Esq.
Samuel Breck, Esq.	Samuel Chandler,
James Bowdoin, Esq.	Thomas Cushing, Esq.
Dr. William Baylies,	Hon. Daniel Coney, Esq.
Hon. Eleazer Brooks, Esq.	Gen. John Cutler, Esq.
John Brooks, Esq.	Hon. Thomas Durfee,
Hon. John Bacon, Esq.	Dr. Aaron Dexter,

Hon.

Hon. Francis Dana, Esq.
 Rev. Samuel Dean,
 Elias H. Derby, Esq.
 Dr. Samuel Danforth,
 Hon. Samuel Dexter, Esq.
 Seth Davenport,
 Hon. Samuel Dexter, jun. Esq.
 Col. Thomas Denney,
 Justin Ely, Esq.
 Hon. Timothy Edwards, Esq.
 George Erving, Esq.—honorary.
 Bessenger Foster,
 Hon. Samuel Fowler, Esq.
 Dwight Foster, Esq.
 Samuel Flagg, Esq.
 Simon Frye, Esq.
 Hon. Moses Gill, Esq.
 Christopher Gore, Esq.
 Hon. Nathaniel Gorham, Esq.
 Hon. Elbridge Gerry, Esq.
 David S. Greenough, Esq.
 Stephen Higginson, Esq.
 Hon. Samuel Holten, Esq.
 Henry Hill, Esq.
 William Hull, Esq.
 John Hicks,
 Rev. John Homer,
 Hon. William Heath, Esq.
 Dr. Ebenezer Hunt,
 Samuel Henshaw, Esq.
 His Excellency John Hancock, Esq.
 Hon. Daniel Howard, Esq.
 Thomas Hale, Esq.
 Artemas How,
 Hon. Joseph Hosmer, Esq.
 Hon. Jonathan Jackson, Esq.
 Charles Jarvis, Esq.
 Leonard Jarvis, Esq.
 John C. Jones, Esq.
 John Jenks,
 Col. Joseph Jones,
 Benjamin Jostyn, Esq.
 Thomas Ives, Esq.
 Israel Jones, Esq.
 Nathan Jones, Esq.
 Danforth Keyes, Esq.
 Martin Kingsley, Esq.
 Hon. Benjamin Lincoln, Esq.
 Hon. John Lowell, Esq.
 Levi Lincoln, Esq.
 Capt. George Lane,
 Thomas Legate, Esq.
 Joseph Lee, Esq.
 Thomas Lee, Esq.
 John Lucas, Esq.
 Hon. George Leonard, Esq.
 Solomon Lovell, Esq.

Theodore Lyman, Esq.
 Dr. Lettsom—honorary.
 Lazarus Le Barron,
 Hon. Samuel Lyman, Esq.
 William R. Lee, Esq.
 John Mears,
 Nehemiah Munroe,
 Jonathan Mason, Esq.
 Jonathan Mason, jun. Esq.
 Abner Morgan, Esq.
 Hon. Elisha May, Esq.
 John Mycall, Esq.
 William Martyn, Esq.
 Col. John Morgan—honorary.
 Rev. Dr. David McClintock—hon.
 Pliny Merrick, Esq.
 Hon. Timothy Newell, Esq.
 Dr. George Osgood,
 Hon. Azor Orne, Esq.
 Col. Samuel Ogden—honorary.
 Hon. Samuel Phillips, Esq.
 Hon. Robert Treat Paine, Esq.
 Charles Phelps, Esq.
 Archilaus Putnam, Esq.
 Rev. Dr. Samuel Parker,
 Rev. Phillips Payson,
 Capt. William Putnam,
 William Dandridge Peck,
 Hon. John Pitts, Esq.
 Samuel Pitts,
 Thomas Palmer, Esq.—honorary.
 Col. Andrew Peters,
 Timothy Pickering, Esq.—honorary.
 Hon. John Pickering, Esq.
 Ebenezer Peirce, Esq.
 Nathaniel Paine, Esq.
 Joseph Russell, jun.
 John Read, Esq.
 Nathaniel Russell,
 Hon. Thomas Russell, Esq.
 Edward H. Robbins, Esq.
 Benjamin Read, Esq.
 Moses Cheney Read, Esq.
 Samuel Salisbury,
 David Sears,
 Hon. James Sullivan, Esq.
 Hon. Increase Sumner, Esq.
 Dr. Oliver Smith,
 Jonathan Simpson,
 Hon. John Sprague, Esq.
 Hon. Theodore Sedgwick, Esq.
 Hon. Caleb Strong, Esq.
 Hon. William Seaver, Esq.
 Capt. Isaac Smith,
 Hon. David Sewall, Esq.
 Hon. William Sheppard, Esq.

Hon.

Hon. Thompson J. Skinner, Esq.
 Samuel Sewall, Esq.
 Rev. Charles Stearns,
 Ephraim Spring,
 Josiah Stearns, Esq.
 Hon. Simeon Strong, Esq.
 David Smead, Esq.
 James Sprout, Esq.
 Hon. Cotton Tufts, Esq.
 Israel Thorndike, Esq.
 Dudley Atkins Tyng, Esq.
 Nathaniel Tracey, Esq.
 Salem Towne, Esq.
 Bezaleel Trafts, Esq.
 Isaiah Thomas, Esq.
 Charles Vaughan, Esq.
 Henry Van Schaack, Esq.
 Hon. J. B. Varnum, Esq.
 Capt. Phineas Upham,
 Parker Varnum, Esq.

Benjamin Upton, Esq.
 Hon. Oliver Wendell, Esq.
 David Wood, Esq.
 James Winthrop, Esq.
 William Winthrop, Esq.
 Thomas Winthrop,
 Hon. James Warren, Esq.
 Joseph Ward, Esq.
 Capt. Ebenezer Wales,
 Dr. John Warren,
 Dr. Thomas Williams,
 Henry H. Williams,
 William Wetmore, Esq.
 Hon. Jonathan Warner, Esq.
 Samuel Waldo,
 Marston Watson, Esq.
 Dr. Benjamin Waterhouse,
 Ebenezer Waters,
 Arthur Young, Esq.—honorary.
 William Young.

*The following Gentlemen have been added to the Committee
 for receiving Subscriptions, viz.*

Hon. DAVID SEWALL, Esq. *York.*
 ELIAS HASKET DERBEY, Esq. *Salem.*
 SAMUEL HENSHAW, Esq. *Northampton.*
 DUDLEY ATKINS TYNG, Esq. *Tyngsborough.*
 HENRY VAN SCHAACK, Esq. *Pittsfield.*
 SAMUEL WALDO, *Portland.*
 Rev. JONATHAN HOMER, *Newtown.*

*On the MANAGEMENT of the DAIRY, particularly with
 respect to the MAKING and CURING of BUTTER.*

By J. ANDERSON, L. L. D. F. R. S. &c.

[Extracted from the sixth article in the fifth volume of the Letters and
 Papers of the Bath Agricultural Society.]

WHEN a dairy is established, the undertaker
 ought to be fully acquainted with every circumstance
 respecting the manufacture both of butter and cheese;
 here it is only proposed to treat of the manufacture of
 butter. The first thing is to choose cows of a proper sort;
 among this class of animals it is found by experience,
 that

that some kinds give milk of a thicker consistence and richer quality than others. In judging of the value of a cow, it ought rather to be the quantity and the quality of the *cream* produced from the milk in a given time, than the quantity of the milk itself; this is a circumstance of more importance than is generally imagined. The small cows of the Alderney breed afford the richest milk hitherto known; but individual cows in every country, may be found, by a careful selection, that afford much richer milk than others; these therefore ought to be searched for with care, and their breed reared with attention, as being peculiarly valuable. In comparing the milk of two cows, to judge of their respective qualities, particular attention must be paid to the time that has elapsed since their calving. To make the cows give abundance of milk, and of a good quality, they must at all times have plenty of food.—Grass is the best food yet known for this purpose, and that kind which springs up spontaneously on rich dry soils, is the best of all. If the cows are so much incommoded by the heat as to be prevented from eating through the day, they ought to be taken into cool shades for protection; where, after allowing them a proper time to ruminate, they should be supplied with abundance of green food, fresh cut for the purpose, and given them by hand frequently, fresh and fresh in small quantities, so as to induce them to eat it with pleasure.

Cows, if abundantly fed, should be milked three times a day during the whole of the summer season, in the morning early, at noon, and in the evening just before night fall. If cows are milked only twice in twenty four hours, while they have abundance of succulent food, they will yield a much smaller quantity of milk in the same time, than if they be milked three times. Some attentive observers I have met with, think a cow in these circumstances, will give nearly as much milk at *each* time, if milked three times, as if they were milked only twice. In the choice of persons for milking the cows, great caution should be employed, for if *all* the milk be not thoroughly drawn from a cow when she is milked, a diminution of the quantity gradually takes place, and in a short time the cow becomes dry. In the management of a dairy, the following peculiarities

liarities respecting milk, ought very particularly to be attended to ; some of them are, no doubt, known in part to attentive housewives, but they have never been considered of so much importance as they deserve.

A P H O R I S M I.

OF the milk that is drawn from any cow at one time, that which comes off at the first is always thinner, and of a much worse quality, than that which comes afterwards, and the richness goes on, continually increasing to the very last drop that can be drawn from the udder at that time.

Few persons are ignorant that milk which is taken from the cow last of all at milking, which in this country is called *strookings*, (here *strippings*) is richer than the rest of the milk ; but fewer still are aware of the greatness of the disproportion between the quality of the first and the last drawn milk from the same cow at one milking—from several accurate and important experiments it appears, that the person who, by bad milking of his cows, looses but half a pint of the last milk that might be obtained, looses in fact, about as much cream as would be afforded by six or eight pints at the beginning, and looses besides, that part of the cream, which alone can give richness and high flavour to his butter.

A P H O R I S M II.

IF milk be put in a dish and allowed to stand till it throws up cream, that portion which rises first to the surface is richer in quality and greater in quantity than what rises in a second equal portion of time, and the cream that rises in the second interval of time is greater in quantity and richer in quality than what rises in a third equal space of time, and so on, the cream decreases in quantity and declines in quality continually, as long as any rises to the surface.

A P H O R I S M III.

THICK milk always throws up a smaller proportion of the cream it actually contains to the surface, than milk that is thinner, but that cream is of a richer quality ; and if water be added to that thick milk, it will afford a considerably greater quantity of cream than it would have done if allowed to remain pure ; but its quality is at the same time greatly debased.

APHORISM

APHORISM IV.

MILK, which is put into a bucket or other proper vessel, and carried in it to any considerable distance, so as to be much agitated, and in part cooled before it be put into the milk pans to settle for cream, never throws up so much nor so rich cream as if the same milk had been put into the milk pans directly after it was milked.

In this case, it is believed that the loss of cream will be in proportion to the time that has elapsed and the agitation it has sustained after having been drawn from the cow.

From the above facts the following corollaries seem to be clearly deducible.

1. It is of importance, that the cows should be always milked as near the dairy as possible, and it must be of great advantage in a dairy farm, to have the principal grass fields as near the dairy as possible.

2. The practice of putting the milk of all the cows of a large dairy into one vessel, as it is milked, there to remain till the whole milking be finished, before any part of it be put into milk pans, seems to be highly injudicious, not only on account of the loss that is sustained by agitation and cooling, but also, as it prevents the owner of the dairy from distinguishing the good from the bad cows milk; a better practice therefore, would be, to have the milk drawn from each cow separately, put into the creaming pans as soon as it is milked, without being mixed with any other.—Thus would the careful farmer be able, on all occasions, to observe the particular quality of each individual cow's milk, as well as its quantity, and to know with precision, which of his cows it was his interest to dispose of, and which he ought to keep and breed from.

3. If it be intended to make butter of a very fine quality, it would be advisable in all cases to keep the milk, that is first drawn, separate from that which comes last, as it is obvious, that if this be not done, the quality of the butter will be greatly debased, without much augmenting its quantity. It is also obvious that the quality of the butter will be improved in proportion to the smallness of the proportion of the last drawn milk that is retained, so that

that those who wish to be singularly nice in this respect will only retain a very small proportion of the last drawn milk.

4. If the *quality* of the butter be the chief object attended to, it will be necessary not only to separate the first from the last drawn milk, but also to take nothing but the cream that is first separated from the best milk, as it is this first rising cream alone that is of the prime quality; the remainder of the milk, which will be still sweet, may be either employed for the purpose of making sweet milk cheeses, or it may be allowed to stand to throw up cream for making butter of an inferior quality.

5. From the above facts, we learn that butter of the *very best possible* quality can only be obtained from a dairy of considerable extent when judiciously managed.

6. From these premises, we are led to draw a conclusion different from the opinion that is commonly entertained on this subject, viz.—That it seems probable that the very best butter can only be with economy made in those dairies where the manufacture of cheese is the principal object.

As but few persons would be willing to purchase the *very best* butter at a price to indemnify the farmer for his trouble, I am satisfied from experience and attentive observation, that if in general about the first drawn *half* of the milk be separated at each milking, and the remainder only be set up for producing cream, and if that milk be allowed to stand to throw up the whole of its cream, even till it begins sensibly to taste sourish, and if that cream be afterwards carefully managed, the butter thus obtained will be of a quality greatly superior to what can usually be obtained at market, and its quantity not considerably less than if the whole of the milk had been treated alike.

No dairy can be managed with profit, unless a place properly adapted for keeping the milk, and for carrying on the different operations of the dairy, be first provided.*—The necessary requisites of a good milk house are, that it be cool in summer, and warm in the winter, so as to preserve a temperature nearly the same throughout the whole year,

* The author here gives a very particular description of the best contrived milk house or dairy.

year, and that it be dry, so as to admit of being kept clean and sweet at all times.

From the trials I have made, I have reason to believe that when the heat is from fifty to fifty five degrees on Farenheit's thermometer, the separation of the cream from the milk, which is the most important operation of the dairy, goes forward with the greatest regularity. When the heat exceeds sixty degrees, the operations become difficult and dangerous, and when it falls below the fortieth degree, they can scarcely be carried forward with *any degree* of economy, or propriety.

In winter, should the cold become too great, it might be occasionally dispelled, by placing a barrel full of hot water closely bunged up, upon the table, to remain till cooled. This I prefer to any kind of chaffing dish with burning embers.

The utensils of the dairy, must in general be made of wood. As the acid of milk readily dissolves lead, with which the common earthen vessels are glazed, such vessels should be banished from the dairy.

The creaming dishes (for so I call the vessels in which the milk is placed for throwing up the cream) when properly *cleaned, sweet and cool*, are to be filled with the milk as soon after it is drawn from the cow as possible, having been first strained carefully through a close strainer.

These dishes should never exceed three inches in depth, whatever be their other dimensions. As soon as they are filled, they are to be placed on the shelves in the milk house, perfectly undisturbed, till it be judged expedient to separate the cream from them.

In a moderately warm temperature of the air, if very fine butter be intended, it should not be allowed to stand more than six or eight hours; for ordinary good butter, it may safely stand ten or twelve, or more.

It is of great importance to the success of the dairy, that the *skimming* be well performed, for if any part of the cream be left, the *quantity* of the butter will be diminished; and if any part of the milk be taken, its *quality* will be debased.*

When

* The cream should be separated from the edges of the dish, by means of an ivory bladed knife, then carefully drawn towards one side by a skimming dish, and then taken off with great nicety.

When the cream is obtained, it ought immediately to be put into a vessel by itself, there to be kept till a proper quantity be collected for being made into butter. And no vessel can be better adapted to that purpose than a firm neat made wooden barrel, in size proportioned to the dairy, open at one end, with a lid exactly fitted to close it. In the under part of this vessel, close to the bottom, should be placed a cock and spigot, for drawing off any thin serous part of the milk that may chance to be there generated ; for if this is allowed to remain, it injures the cream, and greatly diminishes the richness of the quality of the butter ; the inside of the opening should be covered with a bit of gauze netting, to keep back the cream while the serum is allowed to pass, and the barrel should be inclined a little forward, to allow the whole to run off.

The separation of butter from cream, only takes place after the cream has attained a certain degree of acidity. The judicious farmer will therefore allow his cream to remain in the vessel until it has acquired that proper degree of acidity that fits it for being made into butter with great ease, by a very moderate degree of agitation, and by which process only, very fine butter ever can be obtained. How long cream may be thus kept in our climate, without rendering the butter made from it of a bad quality, I cannot say ; but it may be kept good for a much longer time than is generally suspected, even a great many weeks.—It is certain that cream which has been kept three or four days in summer is in an excellent condition for being made into butter ; from three days to seven, may in general be found to be the best time for keeping cream before churning.

I prefer the old fashioned upright *churn*, having a long handle, with a foot to it perforated with holes, as it admits of being better cleaned, and of having the butter more easily separated from the milk than any others.

Where the cream has been duly prepared, the process of butter making is very easy ; there is however more nicety required than most persons seem to be aware of ; a few *hasty, irregular strokes*, may render the butter of scarcely any value, which, but for this circumstance, would have been of the finest quality. The butter when made, must be

be immediately separated from the milk, and being put into a clean dish, the inside of which, if of wood, should be well rubbed with common salt. The butter should be pressed and worked with a flat wooden ladle, having a short handle, so as to force out *all* the milk that was lodged in the cavities of the mass. The beating up of the butter by the hand is an indelicate and barbarous practice. If the milk be not entirely taken away, the butter will infallibly spoil in a short time, and if it be much washed, it will become tough and gluey. Some persons employ cold water in this operation; but this practice is not only useless, but also pernicious, because the quality of the butter is thus debased in an astonishing manner. In every part of the foregoing process it is of the utmost importance, that the vessels and every thing else about the dairy, be kept perfectly sweet and clean.

Wooden vessels are the most proper for containing salted butter. Oak is the best wood for the bottom and staves. Broad split hoops are to be preferred to all others.

Iron hoops should be rejected, as the rust of them will in time sink through the wood, and injure the colour of the butter. To season a new vessel for the reception of salted butter, requires great care: It should be filled *frequently* with scalding water, allowing it to remain till it slowly cools. After the butter has been cleaned from the milk, as before directed, it is ready for being salted. Let the vessel be rendered as clean and as sweet as possible, and be rubbed all over in the inside with common salt; and let a little melted butter be run into the cavity between the bottom and the sides at their joining, so as to fill it, and make it every where flush with the bottom and sides: It is then fit to receive the butter. Common salt is almost the only substance hitherto employed for preserving butter. I have found by experience that the following composition is in many respects preferable to it, as it not only preserves the butter more effectually from any taint of rancidity, but makes it look better and taste sweeter and more marrowy, than if the same butter had been cured with common salt alone. The composition is as follows:

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Take of sugar one part, of nitre (salt petre) one part, and of the best Spanish great salt, two parts; beat the whole into a fine powder, mix them well together, and put them by for use.

Of this composition, one ounce should be put to every sixteen ounces of butter: Mix this salt thoroughly with the butter; as soon as it has been freed from the milk, and put it, without loss of time, into the vessel prepared to receive it, pressing it so close as to have no air holes, or any kind of cavities within it; smooth the surface, and if you expect it will be more than two days before you add more, cover it close up with a piece of clean linen, and over that a piece of fine linen that has been dipped in melted butter, that is exactly fitted to the edges of the vessel all round, so as to exclude the air as much as possible, without the assistance of any watery brine. When more butter is to be added, remove the coverings, and let the butter be applied close above the former, pressing it down, and smoothing it as before, and so on till the vessel is full. When full, let the two covers be spread over it with the greatest care, and let a little melted butter be poured all round the edges, so as to fill up every cranny, and effectually *exclude the air*. A little salt may then be strewed over the whole, and the cover firmly fixed down, to remain closely shut till opened for use. If this be carefully done, the butter may be kept perfectly sound in this climate for many years.*

It must be remarked that butter cured in this manner, does not taste well till it has stood at least a fortnight after being salted. After that period is elapsed, it eats with a rich marrowy taste that no other butter ever acquires. Butter thus cured, will go well to the East or West Indies.

Butter, in its natural state, contains a considerable proportion of mucous matter, which is more highly putrescible than

* The Epping butter is called the best in England. The farmers make use of a very innocent colouring matter for their winter and early spring butter, which is the juice of carrots. They take clean and fresh carrots, and grate them fine, and squeeze out the juice through a coarse cloth, and mix it with their cream. This gives their butter as fine an appearance as the best June butter, without communicating any taste or flavour.

than the pure oily parts of the butter. When it is intended to be exposed to the heat of warm climates, it ought to be freed from that mucilage before it be cured and packed up. To do this, let it be put into a vessel of a proper shape, which should be immersed in another containing water. Let the water be gradually heated till the butter be thoroughly melted: Let it continue in that state for some time, and allow it to settle: The mucous part will fall to the bottom, and the pure oil swim at top. When it cools, it becomes opaque and paler than the original butter, and of a firmer consistence. When this refined butter is become a little stiff, and while it is still somewhat soft, the pure part should be separated from the dregs, and then salted and packed up in the same way as is before directed. *

Those who wish to see the subject more fully treated, are referred to the original.

An ACCOUNT of the MANNER of MAKING CHEESE in ENGLAND.

[By Mr. TWAMLEY.]

IN this second great object of the dairy, the same precaution as with regard to the butter, is necessary, viz. The cows ought not to be driven violently before milking, and every utensil must be kept equally clean.

The most common defects of cheese are, its appearing, when cut, full of small holes, called eyes; its puffing up, cracking, and pouring out a quantity of thin whey; becoming afterwards rotten and full of maggots in those places where the whey appeared. All these difficulties proceed from a substance called *slip curd*, a kind of half coagulum, incapable of a thorough union with the true curd, and which, when broken into small bits, produces eyes, but if in larger pieces, occasions those rents and cracks in the cheese already mentioned; for though this kind of
curd

curd retains its coagulated nature for some time, it always, sooner or later, dissolves into a serous liquor. This kind of curd may be produced by using the milk too hot, by bad runnet, or by not allowing the curd a proper time to form. The first may be remedied by the use of cold water. The second, by good runnet, a knowledge of which can only be acquired by long practice. The only rule that can be given for its preparation is, to take out the stomach of a calf, since it in cold water, and rub it well with salt and dry it. It may be used immediately on drying, though it is considered best after it is a year old. The best method of making the runnet is, to take one gallon of pure spring water and boil it; then make it into brine with clean salt, sufficiently strong to bear an egg; let it cool to about blood heat. Two of the skins (or what are commonly in this country called runnet bags) must be put into the brine, either cut in pieces, or whole, as is most convenient; they must steep twenty four hours; after which, it is fit for use. About a tea cup of a middling size, of the liquor, will be sufficient for the milk of ten cows.

In making cheese, supposing the runnet of a good quality, the following particulars must be observed.

1. The proper degree of heat: This ought to be what is called milk warm, which is considerably below the warmth of milk taken from the cow. If too hot, it may be reduced by cold water, without any injury to the cheese.

2. The time allowed for the runnet to take effect: This ought never to be less than one hour and a half.

3. After having the curd firmly formed at the bottom of the tub, the whey must be taken away, and the curd must stand to drain one quarter of an hour.

If any pieces of slip curd are found swimming in the whey, they should be poured off with it, rather than be admitted into the cheese. Some dairy women allow their curd to stand two hours, to obtain a firmness that will require no breaking; but the best method is to break it thoroughly, for the cheese is less apt to be hard.

4. The best method to prevent cheese from heaving, is to avoid making the runnet too strong, to take care that

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it be very clean, and by no means the least tainted, to be certain the curd is fully formed, which is known by the blue colour of the whey, and by no means to stir it till the air has had time to escape.

5. The best method to prevent the cracking of cheeses, is to salt them in the milk, or after the cheese is formed, which may be done with much more certainty than in the curd, which is a bad method.

6. Dry cracks in cheese are frequently produced by keeping curd from one meal to another, by which means the first becomes too dry and hard, ever, without great attention, to mix intimately with the second.

7. Curdly, or what is commonly called wrinkle coated cheese, is always caused by sour milk. Cheese made of cold milk is apt to be hard and fly before the knife. If the weather is cold, cheese should be kept warm, particularly when first made.

8. Slip coat, or soft cheese, is made entirely of slip curd, and will dissolve into a kind of creamy liquor, which is sufficient proof of the nature of this kind of curd, as already mentioned. It is generally computed, that as much milk is required to make one pound of butter, as two pounds of cheese.

It is remarked by dealers in cheese, as well as other persons, that much the greatest part of the people that eat cheese have no idea how it is produced. They finding the best cheese of a yellow colour, naturally conclude that cheese of a pale colour must be made of inferior or skimmed milk, whereas the colour is artificial. The principal ingredient used for colouring cheese is the best Spanish annatto (or what is commonly called in this country, otter) which gives cheese the beautiful colour of the best spring butter, without injuring the taste or quality in any degree. The best method of using it is, to take a piece and dip it into a bowl of milk, and wash off from the piece sufficient to give the milk a deep colour. Then mix the coloured milk with the milk prepared for the cheese, before either runnet, or salt is put in. If enough annatto has been used, the whole milk will have a pale orange colour, which will be much increased after the cheese is made.

June, 1793.

To the CORRESPONDING SECRETARY of the MASSACHUSETTS AGRICULTURAL SOCIETY.

SIR,

THE following observations were drawn up at the request of a gentleman for his own use. If the Agricultural Society should think that the contents afford any useful hints, I shall be gratified with having contributed something towards the improvement of one branch of that art, which is the most independent and one of the most honourable pursuits of man.

I do not send it to you from an opinion that I have the best information upon the subject, but that, by a communication of each ones experience, improvement goes forward with rapidity.

I am, Sir,

Your most obedient Servant,

ALEXIS.

To Mr. _____

SIR,

AGREEABLE to your request, I have collected the following observations upon the method of making cheese. They are what arose during an experience of but two years. The intention was to have reduced this useful part of rural economy to a regular system, which in this country is left to the operation of chance. This sheet contains but little originality in the principles of this art; they were taken from treatises written in England. If any merit is due, it is for the attention with which these observations were pursued, to ascertain the essential parts of these treatises. This art appears so simple, that every country woman would be offended at being thought ignorant of it; yet a few rules may be collected that require to be observed with almost a chymical exactness. They know that runnet will make a curd: A piece is therefore cut off at hazard and thrown into the milk. If too small a piece is put in, the curd comes very imperfectly, producing what is called slip curd. This is very soft, and the curd thus

thus made, is what is most frequently sold for *cream cheese*. In breaking up the curd, or pressing, this is chiefly squeezed out. That which remains is one cause of eyes in cheese. The fattest part of the milk is most difficult to coagulate, and it is found, that adding more runnet will not perfect the curd, when in this state; the cheese is of course impoverished, when the curd comes imperfectly. But the most frequent error is putting too much runnet, which inevitably gives the cheese a strong pungent taste and smell. It occasions that puffing in cheese which is called *hove cheese*, and being pierced with a knife, will emit a very fetid smell. It is a degree of putrefaction arising from a fermentation caused by the runnet; a sufficient evidence that the cheese can never be good, and is invariably full of eyes. Another cause of bad cheese is bad runnet; and whoever has seen many of our country kitchens, will wonder that they ever have good cheese, owing to the very filthy manner of keeping the skins, being either impregnated with smok, or tainted with flies, and exposed to every disagreeable effluvia that may surround it. To obviate these difficulties, the following is the manner that the runnet was prepared in my dairy. Take the skin, or runnet bag, as soon as the calf is killed; let it be carefully cleaned by hand without touching water; let it then be put into a brine so strong that it will dissolve no more salt; of this brine three pints will suffice for a skin; let it be steeped in it 36 hours or thereabouts; it may then be taken out of the liquor, put into clean bottles and corked; it will keep a year, perhaps longer; the skin may then be drawn over a bow, salted and dried as usual; in two or three months, if your liquor should fail you, it may be steeped again. It is said to acquire new strength, but not so much as at first; perhaps the virtue is not wholly extracted by the first steeping, and that it will not yield it all to three pints of water. This second operation will, however, answer as good a purpose as the first, using two or three skins instead of one. Let one general observation be made, that throughout the whole business of dairying, the greatest attention must be paid to the cleanliness and sweetness of the vessels used, and in the dairy room; and in some instances

es it may not be unnecessary to recommend it to the dairy woman in her own person. In cheese of *one meal*, the milk should be kept as near as possible to its natural heat, till the runnet is put in. I find three tea spoons full to a gallon of milk to be the average quantity required to coagulate it; but this liquor should always be tried, to ascertain its strength. The object is to find the smallest quantity that will bring the curd properly, as more than that will injure the cheese. You will perceive that it is convenient to make a large quantity of this liquor at a time, or making it at different times in the spring, when you begin to make cheese, which is seldom till all the calves are killed, let it be mixed and then tried, after which there is no trouble with the runnet; and you may be certain that whatever other defect the cheese may have, it will not be strong, or hove; this is solely owing to the too great quantity or bad quality of the runnet. My cheese tub being made of the same diametre at the top and bottom, I found its contents in gallons, and made a guaging rod, marking on the depth of the tub, and then subdividing that depth by the number of gallons the tub contained. By putting the rod into the tub, was readily seen the gallons of milk in it. The tub itself might be thus graduated; when you would make servants follow rules, it is necessary that they should be attended with as little trouble as possible. Having put in the runnet, *the milk should not be suffered to cool too soon, as the curd should be sensibly warm when broke up and put into a hoop*, otherwise the cheese will be in flakes when cut, the curd not uniting when cold. *The curd must not be disturbed in the tub, till it cleaves from the sides and begins to settle*. It may then be cut through chequerwise and suffered to settle still more; with a proper temperature of air it will begin to settle in half an hour from the time of settling the milk; cold weather retards it and may defeat it; if the curd is too long in coming, the cream begins to rise and is lost to the cheese; it should therefore be guarded against. There rises upon the whey, when the curd settles, a thin skim, which should be carefully removed before the curd is taken out, lest it should mix with the curd. As it is of a more fixed nature than
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the whey, it will not all squeeze out, nor will it blend with the curd, and where a particle remains there will be an eye. The curd, being well drained of the whey, by breaking it up fine by hand, is to be salted. This is an important part, and of which I am not so well informed as I wish to be. The success of experiments with salt can only be determined by the taste, and this cannot always be done, when the cheese is sold. Salt differs greatly in strength and quality, as is well known to fishermen and packers of beef. In Ireland the beef is first strongly rubbed with blond salt, which is mild and penetrating. It is then passed to another hand, who uses a mixture of blond and bay salt, which is harsh and drying, hardening the provisions. From this consideration of the different effects of salt, it may be concluded that bay salt is not adapted to cheese. I also took bay salt and dissolved it, and then boiled it down; the objectionable parts fly off; and the more violent the ebullition, the finer will be the grain, which indicates its strength, the large grain being the strongest. I liked the salt thus obtained, the grain being as fine as well ground meal. Some of my best cheeses were made with this salt, and the quantity used was one tea cup heaped, to six gallons of milk. This proportion is liable to error, as milk will yield more or less curd according to the season or quality of the grass; and let it be remembered that cows should never be drove hard, especially just before milking. If the common blond salt is used, it should be reduced finer by pounding, that it may more intimately blend with the curd.--The curd being prepared for the press, it appears to me proper that every heterogeneous substance should immediately be pressed out. For this purpose my first press was powerful, being a lever eight feet long, one end fixed by a pin between two stumps set in a bench; near these stumps, was placed the cheese; the other end of the lever was loaded with about two hundred weight of stones; at the other end of the bench were fixed two stumps higher than those first mentioned, which are about six inches higher under the lever than the cheese hoops; the other stumps have a cross piece on the top to rest another lever, which is hooked to the end of the first to raise it. The cheese being tended as usual in this press, where it re-

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remained twenty four hours, was moved to another bench containing four divisions; being each separate presses of no more weight than was immediately laid upon them, about two hundred weight. The cheese when taken from the first press, was put into press at one end of this second bench, and remained in each twenty four hours, moving along every day till arrived at the other end. I suppose three days pressing on this second bench, sufficient for a cheese of twenty five pounds. It was then carried to the cheese room. Screw presses are objectionable, as the pressure does not follow the cheese as it settles. My farm house was fortunately shaded by trees; but the better to guard against the sun, I had Venetian shades made for the windows, of clapboards painted green, which were cheap and handsome. I also had made slender frames, over which catgut was stretched of a texture fine enough to prevent the entrance of flies. When the windows were opened these frames were put in. The cheese room should be exposed on every side except the south, and one or more windows in each side. Attention is much required to regulate the temperature of the air; strong wind admitted will dry the cheese too fast, and make it crack; to prevent this, it is customary with us, to rub the cheese with butter; in England they wash it with the new whey, and no butter is used; this last method I did not try. In hot sultry weather cheese will spread. This should be prevented by bandages of tow cloth, or by putting them into cheese hoops. The expense of this extraordinary number of hoops is not great: One cheese saved, will pay for ten hoops, and they last many years. They will seldom spread after they have been made a month. In wet weather it is adviseable to burn a little charcoal in the chimney of the cheese room. The quantity of green cheese obtained from milk, was from twenty three pounds to twenty five pounds, from twenty gallons. I have got twenty seven and three quarters from eighteen gallons. They seldom lost in drying more than two and a half pounds, in a cheese of twenty five pounds weighed green from the press. If it is required to have the cheese of a Gloucester colour, take Spanish anatto, rub a lump in a saucer with milk; a little experience will teach the quantity necessary for a cheese; then mix it with
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the rest of the milk, when it is set for cheese. One ounce will colour four or five hundred pounds, and it is bought of the apothecaries. It is perfectly innocent, and I thought that the cheese coloured with it, was higher flavoured: This might have been owing to other causes. To have a good dairy, it must be a particular business, and not attended only at convenient intervals from other work, as a secondary object, nor should a drop of cream be taken from milk appropriated for cheese. This must be inviolably observed. I think that large cheeses generally prove better than small ones; and for this reason should not wish to make a cheese less than twenty five pounds. But if the number of cows is not sufficient to make a cheese of one meal, the old milk should be very well mixed with the cream that has risen, and then put into a large brass kettle to warm over coals free from smoke, the milk being frequently stirred to prevent the bottom of the milk becoming too hot before the top is sufficiently warmed, which will be the case without attention. It should be brought as near as possible to its natural heat. To save trouble our women heat a part very hot, then mix it with the cold; but I have no doubt that this injures the cheese. Putting the milk into deep vessels, and covering them in a damp situation, will prevent the cream from rising so much as it otherwise would.

[FROM LETTERS and PAPERS ON AGRICULTURE, published at
HALLIFAX.]

*To the SECRETARY of the AGRICULTURAL SOCIETY,
at HALIFAX.*

THE intention of the Society being so obviously of the first importance to this country, I am induced to request that the following observations may be communicated to the next meeting.

Every

Every day's experience evinces that our soil is good, yet, such is the coldness of the climate, that when land has been improved three or four years without manure, it grows mossy, and afterwards produces but little : There are few countries, therefore, where the article of manure can be more profitably attended to, because, when well prepared, it not only replenishes the earth with food for vegetables, but by its warmth counterbalances the coldness of the climate. As what has been written on this subject is in the hands of but few, I have endeavoured to bring together the opinions of the most modern authors, which from my own experience I can recommend to the practice of the farmers in this country, remarking at the same time, upon the improper use which too many make of their dung. Lime, Marl, Plaister of Paris, &c. &c. are good, and some of them perhaps the best of manures : But it is not in every one's power to procure them, especially in such quantities as are necessary for the farmer : But a COMPOST is within the reach of every person, and almost in any quantities, and which no prudent person, upon knowing its usefulness, will ever be without.

There is perhaps no one practice in husbandry more injudicious than that of taking new dung from the yard, in the spring, and using it as a manure for potatoes, spread over the ground, or in any other way whatever, as it introduces grass, weeds, and noxious plants, which more than balances any little benefit that it can possibly do as a manure when used in that unprepared state.

When new dung lies in large heaps it soon grows very hot, and a violent putrid fermentation comes on, which melts the whole into one common mass, reversing what took place in vegetation, bringing that matter which has been the substance of former vegetables into such a state, that it will become the food for succeeding vegetables : But when it is put in small quantities in the hills of potatoes, or spread on the ground and plowed in, even if it had begun to grow hot and ferment, it will immediately be cooled by the surrounding earth. In order to keep alive that heat which is necessary for its putrefaction, or rotting, it must be kept in large heaps. Let any one spread new dung over the ground, and in a week's time, if the weath-

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er is dry, it will look little better than dry straw; he will now find it has lost more than half its weight, and with that a large proportion of its real riches. In this state I have often found it in hills of potatoes in a dry season, where it manifestly did more hurt than good, by keeping the roots from the moist earth: If after this it rots, yet it never can recover that which it has lost by its rich moisture being rarified and evaporated by the sun. It should therefore be suffered to lie in some convenient place in a body together; by which means its moisture is preserved, a suitable degree of heat generated, and a universal putrefaction takes place, turning every part of it into proper manure or food for vegetables: For in its crude state it can scarcely be called a manure, but only something of which a manure may be made, because there is no part of it but what must be dissolved by putrefaction before it can yield much vegetable food; hence it comes to pass that if the season proves wet soon after it is used, it does some good, as it affords a little nourishment by being putrified from the wetness of the season; but should the season prove dry, no putrefaction can take place, so, that of course, it affords no nourishment to vegetables, but does real hurt by keeping the ground too open and hollow in the hills where it is put. Yard dung, then, should never be used 'till it has been in a proper situation for fermentation and putrefaction, one year at least; by this means the seeds of grass, weeds, or noxious plants, will mostly perish, and the dung by its putrefaction, be stored with great quantities of proper food for vegetables, possessing those qualities which tend to meliorate and enrich the land. To accomplish this plan in the spring, it should be put into the place where it is intended the general compost heap should be made. For this purpose a hollow place should be chosen; and if it cannot otherwise be had, it should be dug large enough to hold the quantity of manure intended to be made. If a place can be taken so situated as to receive the wash of the dwelling house, cow yard, hog sty, &c. so much the better. It must be clayed all over its bottom and sides. Drains must be cut from the lowest part of the cow yard, and hog sty, into the place prepared to receive the compost, so that whatsoever is washed

washed out of them by rains may be carried directly into the compost heap. All kinds of weeds from the sides of fields, where they often do much hurt, by shading and drawing the nourishment from plants that grow near them, may be pulled and thrown in : And in hoeing where the land is weedy, small children might often be employed to good advantage in gathering up the weeds after the hoers, and throwing them in heaps ; by which they would be prevented from taking root again, the land would lie clean, and cart loads might in that way be gathered. Sprouts also pulled from the stubs in new ground, when they are in a succulent state, before they grow woody or hard (which by the way is the best time to sprout new ground) may be thrown in heaps and carted in : Rock weed, kelp, and all sorts of sea weed or grass, may be carried in great quantities, where they can be had ; garbage of fish, hair, blood, bones, woolen rags, oyster shells, muscles, and every kind of animal substance, are excellent, and capable of making more than four times their own weight of good manure ; ashes, such as are made by burning bushes, may all be thrown in, and it is better to gather some of the earth with them, than to leave any of the ashes, as the top of the earth in those places is often almost as much impregnated with salts as the ashes themselves ; ashes that have been leeches are also good ; the dung in the cow yard should be removed every morning into a heap by the side of the yard ; by this means the yard is kept clean, and the dung is kept from drying, and as often as there is enough may be carted to the general heap. If the farmer has not the convenience of a hog pasture, but is obliged to keep his hogs in a sty, he will find it for his interest to throw in great quantities of green weeds, grass, &c. as it will save more costly feeding, and in this case the sty should be often cleared and its contents carried to the general heap. To a compost heap, made of such materials, considerable earth may be added ; but then it should be well chosen ; any place where the wash of a road or street is brought to settle, is excellent, and mud may often be taken from settling places in a road, and dry earth put in its place, to the great advantage both of the road and him who takes it ; half a hundred loads of good loam, and even more, where there
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is a large yard and many cattle, may be carried into a cow-yard in the spring of the year, and be wholly carried into the compost heap by the fall, taking off the top at several different times. In Holland and some parts of Germany, they are at great pains to save the urine of their cattle for manure, and find it of considerable consequence; by the above method it is all effectually preserved, which, together with the hot steam and perspiration of their bodies, whilst lying upon the loam, so far enrich it as to render it a very valuable addition to the compost heap. The compost should be turned up from the bottom once or twice in a summer, which will greatly forward its fermentation and putrefaction; and towards the fall, when the seeds of weeds and grass begin to be ripe, it is best to move the compost all to one end, that such rubbish as abounds with ripe seeds, may be put by itself and lie round to another year. At the fall, when the crops come in, considerable addition may be made by carrying in all the vines, stalks, &c. of every kind of vegetable from the garden; also, potatoe tops and turnip tops, if not wanted for cattle; these last make a manure of a very excellent kind. All the chaff from the several kinds of grain that may be raised—every kind of damaged or rotten straw or hay, or old stack bottoms, &c. may come in, in the course of the year, with every thing that is capable of a quick putrefaction.

Such as can afford it, will find their account in having a shed built over their compost heap, yet it must be open and exposed to the air on all sides, for by such exposure not only the putrid fermentation will be forwarded, but much will be drawn from the air, especially if there be any ashes in the heap, which will greatly increase the richness of the compost; yet a covering at the top will be very necessary, otherwise the rains will not only greatly check the fermentation, by too often cooling it; but will probably, when they come plentifully, cause it to overflow its banks, and carry off the rich juices of the compost; also, without such a shed it might sustain damage by having its most subtle and volatile parts evaporated by the sun. I have indeed seen compost heaps, without clay at the bottom, or a shed at the top; but, that much is lost from such a heap
by

by all its washings in the course of the year, is too manifest to need any thing said upon it. It is true, that in this way of putting all his new dung into the compost heap, the farmer must go a year without manure, if he has not that which is old and good by him; but when once he has his compost heap fit for use, after that he has his manure as regularly every year, as those who follow the pernicious practice of wasting their new dung, (I can call it nothing better, for it often does hurt); and he who follows the above method, or something like it, will soon find that from one acre of land, well manured, he can raise more than he can from two without manure, so that one half his labour will be saved; the labour and pains that he has been at in making manure, will be returned with ample increase into his barn and stores, and his farm at the same time increasing in riches.

Those who have a good stock of cattle, hogs, &c. may, in some such way as the above, increase their manure to almost any quantity they shall need: And such as have no cattle (and there are doubtless some such among our new settlers) may, in the above way, make considerable manure in the course of the year, from the wash of the house only; and such manure is good, and will produce cucumbers, peas, beans, &c. quicker than good yard dung. To conclude, the more any one attends to the affair of manuring his farm, the easier and more elegantly it will support him; whilst, without that, upon such land and in such a climate as we have in this country, an industrious man may, after a course of years, find that all his labour hath been in vain.

Feb. 20, 1790.

A FARMER.

EXPERIMENTS *to determine whether it is best to plant*
LARGE or SMALL CUTTINGS of POTATOES.

[By the Rev. Mr. COCHRAN.]

IN the Nova Scotia Magazine* for December, 1789, there appeared some extracts from an Essay on Potatoes,

* Vol. I. page 454.

toes, published among the Papers of the Bath Agricultural Society, for 1788. In these a prodigious difference is noticed, between the produce from large cuttings and that from small, in favour of large ones, *as nine to one.*

That a considerable difference of produce might escape the observation of mere practical farmers, who seldom make comparative experiments, is readily to be supposed, and that, therefore, it might still be a disputed point amongst them, whether large or small cuttings are most profitable, as the author who relates those experiments asserts it is, and as we know it to be here. But we can hardly suppose that any farmer, who should see one acre in his neighbour's field produce as much as nine in his own, would continue inattentive to the advantage of using larger seed.

In the extracts, where this amazing disproportion of produce is mentioned, it is not stated what proportion the cuttings, used in the one and in the other case, bore to each other. Probably there was a greater difference than between those which are commonly used here. However, if the loss by planting small cuttings should only be one half, or even one fourth part of that mentioned above, still it would be an object highly deserving the attention of farmers. I thought, therefore, it might not be a useless experiment, to try two or three different sizes of cuttings, near to those usually planted in this neighbourhood, and to mark the difference of produce, if any.

For this purpose, in the second week of June last, I took an equal number of cuttings, of three different sizes; the largest (No. 1.) were somewhat larger than those usually planted here. The second size, which I shall call No. 2, was less than one half of No. 1. The third size (No. 3.) was about one third of No. 2.*

I planted 100 hills with each size, four cuttings in each hill. The land, manure, and cultivation as nearly alike as I could make them.

From

* The cuttings of each size were weighed, and the weight noted at the time of planting, but the memorandum has been mislaid. However, although I cannot recollect the absolute weight, I am certain the proportion to each other was, very nearly, as above.

From the first appearance of the plants, a striking difference, in favour of the largest size, was observable. Many of the hills from No. 1, had ten, twelve, or fourteen stalks, strong and healthy. Those from No. 2, much fewer and weaker. Those from No. 3, in many instances had not more than four stalks, and those small and feeble. The difference, though still very perceptible, was not so great toward the end of the summer, as at the beginning.

In the beginning of November they were all taken up, and the produce weighed.

No. 1, produced 280lbs.

No. 2, 249 $\frac{1}{2}$

No. 3, 168

The medium weight of a bushel, upon several trials, was found to be 61lb. Therefore the produce of No. 1, was something above four bushels and a half; and the difference between No. 1, and No. 3, nearly two bushels. This is very considerable. If an acre planted with cuttings such as No. 1, would produce two hundred bushels, by planting such as No. 3, the farmer will lose 80 bushels. In four acres the loss will be 320 bushels; in eight acres, which many farmers plant in a season, it will be 640 bushels!

I am informed, that some farmers in the province plant only the eyes of their potatoes, and give the rest to their cattle or hogs. With these the loss must be still greater.

[From LETTERS and PAPERS on AGRICULTURE, published at HALIFAX.]

On the UTILITY of INTRODUCING the GENERAL CULTIVATION of RED CLOVER in this Province:

[By WILLIAM COTTNAM TONGE, Esq.]

AMONGST all the late improvements in the agriculture of Great Britain, which have brought the science so near to perfection in that country, the introduction of red clover may be ranked as one of the principal and most important; the use of this valuable crop, and
turnips,

turnips, has nearly banished the practice of employing unprofitable fallows as a preparation for crops of grain. The farmers of Great Britain use clover not only as the herbage for laying their lands down to meadow, but also as a part of their arable system; experience teaching them, that the cultivation of it, is one of the best courses that can be pursued for preparing land for the raising wheat.

The introduction and general use of this crop, would, I am convinced, be equally beneficial to this country; to the circumstances of which it appears every way perfectly adapted.

It is a position, which I conceive will be universally assented to, that this province can never become rich or flourishing, until its inhabitants can accomplish the raising of their own bread corn; and to this great object, the views of all, who wish the prosperity of the country, and particularly those who are employed in cultivating its lands, should be invariably directed.

The causes of the present deficiency are not to be sought in the climate and soil of the country, but may be easily discovered in the injudicious and improper management of the inhabitants. The reason that more wheat is not raised in this province, is, that more land is not prepared for that grain; and it is a fact well known to those who are acquainted with the general practice, that much wheat is sown without any previous preparation of the land; the crops being such as might be expected from such management.

The complaints made against this country, as unfavourable for wheat, are founded in ignorance or prejudice; the crops of that grain in many parts of it palpably contradicting such assertions, as does the judgment of men, who have had experience in agriculture in other countries as well as this. The chief real natural disadvantage that the province labours under, is, the shortness of the season for performing the several works of agriculture; this circumstance may forbid the use of that extensive tillage which is practised under more favourable climates, but does by no means extend to prevent every farmer from raising his own bread and a surplus for sale; the aggregate of which surplus will form a fund not only for the supply of those
who

who are not employed in the cultivation of lands, but also for exportation, which I cannot relinquish the hope of seeing take place from this country.

As the shortness of our season may prevent us from availing ourselves of many modes of preparing our lands, which are practised under different climates, we should unquestionably be more attentive to the use of those which are peculiarly adapted to our own; and the cultivation of clover appears to me one of the most important of these, not at present in use.

We cannot advantageously cultivate turnips (one of the great ground works of modern husbandry in England) to any considerable extent, because our climate will not allow of our feeding them through the winter, and the labour of getting them up and storing them, would make them too expensive; but no such objection lies to the use of clover, which may without loss of time, or additional expense (except the seed) follow our hoeing crops with the wheat, which usually succeeds them, and would by lying two years in the ground, prepare it in the most perfect manner for another crop of that grain, producing in the mean time most beneficial returns for the land it occupies. By the usual mode of management, wheat is procured but once, after a perfect manuring with potatoes, or other hoed crops (unless by the execrable method of sowing it two seasons successively) it being usually followed by two crops of oats, which divest the soil of all its richness; the land is then turned out to grass, producing little or nothing but weeds until time has restored it to fertility, being unfit for the production of wheat, without another manuring, or laying a great length of time in pasture; whereas, by sowing clover seed with the wheat, following a hoed crop, the land is made to produce two valuable crops of hay and grass, and is rendered in the highest degree fit for the reception of wheat; for let the ground be in any degree rich, on which clover is sown, the deep penetrating roots and long shadowy tops of this plant are sure to increase its richness, and bring it to that mellow state, so favourable to the growth of that grain.

On the whole, I most earnestly recommend to my brother farmers the use of this plant, the cultivation of which will so much increase the quantity of their wheat lands.

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The great obstacle to the adoption of it, is the cost of seed (if purchased) ; and many have been deterred from raising it by the difficulties they have experienced in attempting to get it cleaned from the husk ; but the first objection may be obviated by purchasing but a small quantity of the best English seed, for a stock to raise more from ; and the difficulty of cleansing seed may be removed by attending to the following circumstance, which is, that in raising clover, to ripen seed, it is necessary to feed down, or mow the first growth in the spring (which tends wholly to stalks, leaves and chaff), not letting it grow up till near midsummer ; by this means the stalks will be short and thick, will have few leaves on them, and will be covered with large heads well filled with seed, which parts easily from the husk.

A member of this society (Mr. Burton) who first mentioned this circumstance to me, has raised as fine clover seed in this way as any imported from England, and will doubtless communicate to any person, desirous of information, the methods he took to clean it.

A NEW METHOD of CULTIVATING and PREPARING H E M P.

[By the ABBE BRALLE.]

Printed in England, by order of the Lords of the Committee of Council for Trade and Foreign Plantations.

IT is sufficiently known, that land intended for a crop of hemp must be well manured, well ploughed, cleansed, and gotten fine ; and the season being arrived ; which varies much according to the soil, weather, and convenience of the cultivator, extending from the 25th March to the 15th June ; sow the hemp seed, which ought always to be new seed, thin, not exceeding two bushels to an acre, and if you have the advantage of a drill plough, still less will do. After the land is sown, go through the whole with a shovel, and with it make little paths at seven feet distance from each other, the length way of your piece, so that

that at the proper season you may reach the female hemp, which you will have occasion to pull out, without trampling on the male, which must stand at least a month longer to ripen its seed. The female hemp, (which is that which bears only flowers and no seed) is known to be ripe by the flowers fading, the farina fecundas falling, and *some* of the stems turning yellow. You must then draw out carefully the whole of the female hemp, breaking as little as possible the stems of that which you take, or that which you leave.

Immediately as it is gathered, take it in as large handfuls as you can, and either cutting the roots off, or leaving them on, as you like best (I prefer cutting them off) hold the root end uppermost, and with a wooden sword dress off the flowers and leaves, which you leave in the field, since they assist in manuring; pick out any weeds or spoilt plants; put twelve handfuls, or gripes, together to make a bundle; then lay the bundles in water; it is much the best to be a running and clear water, and if shaded and overhung with trees the better; lay poles, or planks, or whatever else you have that is suitable, across a large number together, so as to keep them at least two inches under water. Take particular notice which you lay in first, and how you lay the bundles, in order that you may be able to get them out again successively as they were laid in, without breaking or tangling. At the end of six days, visit the hemp, and see whether the reed will draw out from some of the bundles. The time required for soaking depends very much on the nature of the hemp, the weather, and of the water it is soaked in—from six days to nine, or even to eleven. It is a trouble that is not ill bestowed to sort the hemp for soaking, if it is of unequal sizes, the slenderest generally requiring most soaking.

When you find any quantity sufficiently soaked, take it with care, putting the hands under it to prevent breakage, and transport it to a trough or to a table; for there are two methods of working it. If you work it in a trough, you must be provided with one somewhat longer than any hemp that you mean to work in it—twelve, or fourteen inches deep, and of what width you think proper according to the number of persons you employ at it, as
one,

one, two, or four. To this trough must be fitted two pieces of plank, of about a foot length, but of such width as to stretch over a bundle of the hemp as it lies open in the water : These planks must be set on one side with teeth of brass wire, and when the hemp is ready for drawing, must be laid on it as it lies in the water, to keep it straight and immersed.

If you work the hemp on a table, you must, before taking it out of the water, open a little the bundles, and rub the stems between your hands to get off what you can of the slime, and to loosen the rind. You must likewise push the bundle along in the water, with the loose end foremost, to loosen the rind at that end where the operation is to be begun. If you do not thus rub and scour your hemp in the water where you soak it, you must do it in the trough. But in either case you must be careful to keep an even and steady hand to avoid breaking the reed, which, as many times as it happens, renders the operation of getting the reeds out tedious. If it is wrought on the table, the bundle must be frequently though slightly wetted. If any suitable method could be taken to make water drip gently on it, it would be best. A plank must be laid on the bundle to keep it steady.

All matters being properly disposed, either on the table or in the trough, you must begin at the root end to push back a little of the rind from the stem ; then taking hold of one stem at a time, and rather near the outside than the middle of the bundle, keep your hand and the reed under water (if you work in a trough) and draw it out from the bundle as strait as possible, you will find it come out as clean as a sword from its scabbard. As you proceed, you may take two, afterwards four, up to six or more reeds at a time, which will draw out still more easily. When you have drawn out all the reeds that you can find at the root end, lift up the spiked plank which was at the upper end, leaving on that which was in the middle, and draw out such pieces of *reed* as you may find at the upper end, and which have remained after drawing out what you could at the root end, because they were broken. Lastly, take off the plank which lay on the middle, and take out all the relicks of reed you can perceive. If your hemp

was

was in good condition for drawing, you will find all your reeds perfectly clean on the floor, and the rind, which is the hemp, lying in strait threads, in the water or on the table.

You will perceive that among the hemp there is a great quantity of gum left, looking like a jelly ; this you will wash out as if you were washing any long strait piece of cloth, observing not to displace, or twist the threads, which would thwart the future operation of dressing, or heckling. The finer and whiter you desire the hemp to be, the more waters you will run it through, squeezing it out at each time of washing ; but I think it *always* right at the last to run it through a water in which a small quantity of soft soap has been beat up, after the rate of an ounce of soft soap to three pounds of the hemp when dry. Do not squeeze it out from this soap water, but hang it to drain, and when a little stiffened, open a little the bundle, and lay it to dry on a grass plat, or floor ; the former is preferable. This soap water is not absolutely necessary, but is certainly of great use for softening the hemp, and rendering it pleasant and easy to dress ; but may be dispensed with where it is very inconvenient, and where the hemp is intended for coarse purposes. It is obvious that all these operations would be carried on to the most advantage near to some running stream, or large lake, if it be a standing water, on account of the great use that is made of that element, and to save a great deal of the trouble of transportation.

When thus dried, the hemp is proper either for dressing, or storing ; if the latter, particular care must be taken that it be thoroughly dry, it will otherwise heat and spoil. As the hemp peculiarly intended to be hitherto spoken of is the female, or flower bearing hemp, which is intended for fine uses, it is to be observed that it must be worked with heckles, or hatchels, such as are used for flax dressing, and may be brought to an extreme fineness ; and the shorts, having no pieces of straw, or reed among them, may be carded and spun, and brought into use for all the same purposes as cotton, and the same methods used for bleaching and softening. It is likewise requisite to work this hemp as soon as pulled, without which the greatest softness

softness and whiteness cannot be obtained; and as this sort generally falls ripe between hay time and harvest, when the weather is warm and fine, and the women most at liberty, it will be a suitable occasion to draw and cleanse the hemp—the dressing may be reserved for winter.

I now proceed to speak of the male hemp, which being a more considerable crop, cannot all be worked as fast as it is pulled or cut. It is known to be ripe enough by the stems becoming pale; for if you stay till the tuft containing the seed appears ripe, or the stem turns brown, the hemp will be in a great measure spoiled. When it is come to a proper maturity, you must get a good number of hands, so as to expedite the business, because such as remains standing after it is ripe; will have its rind fixed to the reed, the gum turned hard and dark coloured, and the whole operation of drawing becomes difficult, troublesome, and ungrateful. The leaves are to be stripped off with a wooden sword, in the same manner as those of the female hemp, as are likewise the seed, the branches which grow laterally, and even the tuft bearing seed at the top: But if this latter should not come off clean, it must be chopt off with an iron instrument. All this must be done over a cloth, or on a spot of ground in the field, well levelled and smoothed, to avoid losing any of the seed. And it is proposed, and said to be successful, to leave the seed abroad, covered with the leaves and chaff strewed on the land. This certainly saves trouble, and is practised in many parts, but seems to me slovenly, and I would rather take it home to a barn; but I would certainly burn all the roots, and such parts as are too hard to rot easily, and strew the ashes as well as the leaves, and such other parts as will easily rot, upon the ground, as these matters are reckoned to go half way towards manuring the land for next year's crop. The male hemp, thus stript of leaves and seed, will generally dry for storing in twenty four hours; but at any rate must not be left long abroad, but rather taken into sheds to dry, which, when thus stript, it will speedily do. Sun and rain would soon spoil it. That which can be wrought green must be treated as before set forth for the female hemp; and it is obvious that it is a great advantage

to

to work it in this manner, rather than to dry and store it, which causes much trouble and expense and produces less and worse hemp ; but where the crop is considerable, and the hands few, it is unavoidable. If, however, much rain comes, it is impracticable to dry it for storing without spoiling, as every year's experience shews in the present received method ; whereas the working the hemp green entirely avoids this disadvantage and inconveniency, and the hands engaged may continue their employment under the shelter of trees, or of a temporary shed made of a few rough poles and hurdles, covered with straw, reeds, &c.

All the same procedure is to be used with the male, as with the female hemp, as to drawing, scouring, &c. but as the reeds of it are less brittle, and the rind coarser, it requires more soaking, but is easier to draw, and produces much more and stronger hemp. What is stored must, when wanted to be wrought, be soaked, peeled, washed, and in general treated as before said. In cold weather it takes long soaking.

Detached Observations on Hemp.

IT is capable of being cultivated on all kinds of land ; the poorer land producing the hemp finer in quality, though smaller in quantity, and the rankest land producing strong and long, though coarse ; and this sort being the easiest to draw and work in the new mode, the quantity of manure requisite in the first instance is not above half of that for wheat, and the subsequent years, not above half that half, and the hemp still improving in quality. All the work in the new method, not excepting the dressing, is fitter for women than men, and may be practised advantageously by every cottager.

No bleaching is wanted for the linen made of hemp prepared in the new method ; and it is certain, that if the hemp be fine, well managed, and dressed with the finest flax hackle, it may supersede almost all the uses of flax, which flax is a more uncertain and less abundant crop, requires more culture and better land, which it exhausts ; whereas hemp grounds increase in goodness. If the male
hemp

hemp intended for cords has been treated with little attention, and but little scoured, or bleached, the shorts which come from it in dressing may be scoured over again, to render them more useable. The hackle, and even the hemp itself, may be a little oiled in the dressing, which will much facilitate that business, and instead of fouling, will rather assist in bleaching the threads, when they come to be washed.

Both the dressing and spinning of hemp are best carried on in a damp place. Hemp is naturally inclined to twist too much in spinning.

The greatest injury that can befall hemp, is that of sun baking. But after all, the greatest injuries that can be done to hemp, the new operation may be performed on it; though with little success, yet sufficient to render it better than that which is procured by any other operation, whereof I have, at this moment, the proof under my eye. The greatest whiteness can never be procured but by working it green. If stored, the greener it is got in, the whiter it will be. The more the colour is changed, the worse will be the colour of the thread.

Fifteen pounds of male hemp may be gotten off in a day, by one person; only seven pounds, of female. It is necessary to pick the hemp plants over at several different periods, in order to avoid having any bad stems among the good, which might spoil a whole parcel, especially if intended for fine linen.

There is great reason, from a slight attempt that has been made, to think that a dye might be procured from the water in which the hemp is scoured, after that it is gotten off from the reed.

It is likewise thought that an instrument may be imagined for drawing the reeds from the threads or rind, or else the rind or threads from the reed, more expeditiously. A few bundles have been cleaned with a common rake.

In France it is common, at the time of pulling the female hemp, to scatter turnip seeds in among the stems of the male hemp, which are left standing, and these turnips frequently produce a good deal of feed for sheep or cattle after the male hemp is taken off. It is obvious that what-

ever

ever has this effect, has, besides the benefit of supporting the stock of a farm, that of aiding to manure the hemp grounds, especially if it be sheep that are fed on it; therefore if this method fails, it would be prudent, immediately as the hemp is off the ground, to plow it up, and sow turnips, cole seed, rye, or any other thing proper for sheep feed, which can be gotten off early in the next spring, so as to be able to till the land well in time for receiving the hemp seed.

It is less an injury to the hemp to pull the plants before they are ripe enough, than to leave them too long standing. It is a less injury, in soaking the hemp, to leave it too long in the water than to take it out before it is sufficiently soaked.

The more the hemp is cleansed after getting off the reed, the finer it becomes, and the finer dressing it requires: Nothing but experience can mark the degrees.

The most advantageous time to begin the culture of hemp on any land, is immediately after a crop of turnips; exactly the same as if you were about to sow barley.

The coarsest black soap, which costs in France only three pence per pound, will suffice for making the suds through which the hemp should pass.

It is asserted, from experience, that putting the clusters containing the hemp seeds to sweat and heat, causes many of the seeds to come to perfection; which, in the common method, would wither and become dead; and that it of course improves both the quantity and quality.

An improved METHOD of PRESERVING the FINE FLAVOUR of BUTTER, and of PREVENTING its GROWING RANCID.

Communicated to the "Burlington Society for the promoting Agriculture and Domestic Manufactures," by their PRESIDENT, and ordered to be published. From the American Museum, Vol. VIII. Page 172.

TO a peck of fine salt add one ounce of crude sal ammoniac, and two ounces of saltpetre, both finely powdered;

ed : Mix them very well with the fine salt : With this salt, work your butter, until the butter milk be entirely extracted. Then pack it in wooden firkins, salting it with the same mixed salt, to such a degree as to be palatable, when eaten with bread, and no salter. The mixture is stronger than fine salt : Of consequence something less is required,

By order of the Society,

W. COXE, JUN. SEC'RY.

*DIRECTIONS for the MANUFACTURING SUGAR
from the MAPLE TREE.*

[From the AMERICAN MUSEUM.]

IF the sap is drawn into wooden vessels, care should be taken that they are made of such wood as will not give the liquor a bad taste. Some maple sugar has a disagreeable taste, occasioned, as I have been informed, by the sap having been put into trays made of the white walnut. If the moulds are made of wood, they also should be made of some kind of tree that will give no taste. The greatest part of the maple sugar I have seen, has too small a grain ; which is owing to two causes ; one is, the makers of it do not use lime or lye, or any thing else, to make it granulate ; the other is, that they boil the sugar too much.—The quantity of lime necessary to answer the purpose, I cannot exactly ascertain ; but I suppose a heaped spoonful of slackened lime would be sufficient for about six gallons of sap. A judicious person after a few trials, would be able to fix the due proportion. It may, however, be proper to mention, that if the quantity of lime is too small, the sugar will not be sufficiently grained ; if too much, it will give the sugar a reddish cast. I have before observed, that the sugar should not be boiled so much as has been the common practice. That, from which runs about one sixth of its weight in melasses, in twenty four hours after it is put to drain, I think, has been boiled properly ; perhaps, in three

three or four weeks afterwards, it will run the like quantity of melasses, making the whole of the running about one third the weight of the green sugar. It is probable that those who have been accustomed to high boiling, in order to get as much sugar as possible in the first process, will not approve of this method, but perhaps may be better reconciled to it, when they are informed, that if they boil this melasses or syrup with strong lime water, one third of the latter, to two thirds of the melasses, there is reason to expect it will make good sugar, although not equal to the first sort.

I shall now proceed to give some directions for the making of maple sugar :--- Let all the sap that has been collected in one day, be boiled the day following, lest it should ferment, in which case the sugar would be less in quantity, and worse in quality. To carry on the business to the greatest advantage, there should be three kettles of different dimensions. These kettles should be fixed in a row, the smallest at one end, the middle sized next, and the largest at the other end.—When there is a quantity of sap collected, put as much in the largest kettle as can be conveniently boiled in it ; then throw in as much lime or lye as may be deemed necessary to make the liquor granulate. Keep a moderate fire for some time, and as the scum rises, take it off with a skimmer ; after the liquor is pretty clear, increase the fire and boil it briskly, till so much is evaporated, as that which remains may be boiled in the middle kettle ;* into which the liquor must be strained through a blanket ; under this kettle, keep a good fire, and take off the scum as it rises. As soon as the liquor is taken from the large, and put into the middle kettle, fresh sap must be put into the former, and treated as before directed, and so on, till all the sap is boiled.

When the liquor is sufficiently evaporated in the middle kettle, to admit its being boiled in the smallest, it must be put into the last, where it must be boiled, until it gets to a proper consistency to make sugar. When the liquor is taken from the middle kettle into the smallest, the former must be supplied, as is before directed, from the largest, with

* Some liquor should be left in the large kettle, if an iron one, otherwise there would be a danger of its splitting, upon putting in cold liquor.

with fresh sap. The liquor, in the small kettle, must be boiled briskly, until it gets pretty thick, when the fire should be lessened, to prevent its burning. When the liquor rises in the kettle, a piece of butter or fat, the size of a hazle nut, may be thrown in; if this quantity does not make it boil flat, more should be added, until it answers the purpose, and this must be repeated as often as the liquor rises. When it is boiled enough, which may be known by the mannert[†] of its roping between the thumb and finger, it must be put into a cooler or tub, when the small kettle must be supplied with liquor from the middle sized one, that, with more from the largest, and the large one with fresh sap, as is before directed. When one third of the sap, that has been collected, is boiled and put into the cooler, it must be stirred briskly about with a stirring stick (which may be made like a small paddle) until it grains, when it may be left (if the business has been well done) until another third of the liquor is boiled, and put into the cooler: It must be then moved about with the stirring stick, until it is well mixed together—when the remainder of the liquor is boiled and put into the cooler, it must again be moved about with the stirring stick, until the whole is well mixed, when it must be put into moulds; earthen would be best; but wooden moulds may be made to answer the purpose, by nailing or pinning four boards together, so shaped as to make the mould one inch diameter at the bottom, and ten or twelve inches at the top; the length may be two feet, or two feet and an half—these moulds must be closely stopped at the small ends, with old coarse linen, or some such thing, and set up with something to stay them; the sugar must then be taken from the cooler, and poured into the moulds—next morning the stoppers must be taken out, and the moulds be put on troughs, or some vessel to drain their melasses. In the evening, the loaves must be pierced at the small ends, to make them run their syrup freely—this may be done by driving a wooden pin, (shaped like a marling spike) three or four inches up the loaf; after which they must be left
to

† Dip a stick into the liquor, apply the thumb to it, and take part of what adheres to the stick, then draw it two or three times between the thumb and finger.

to drain their melasses, which will be done in a shorter or longer time, according as the sugar has been boiled.

No part of the business requires greater attention than granulating or graining the sugar in the cooler, and afterwards frequently observing the state it is in—if too thick, it may be remedied by boiling the remaining liquor lower, than that which was boiled before—if too thin, by stirring the cooler again, and boiling the remainder of the liquor higher, or more.

A SUGAR BOILER.

Philadelphia, August 21, 1789.

The making of sugar is quite common and easy with a single kettle of any size.